

# AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

PERCIVAL SHELDON RIDSDALE, Editor

NOVEMBER 1919 Vol. 25

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Entered as second-class matter December 24, 1909, at the Postoffice at Washington, under the act of March 3, 1879. Copyright, 1919, by the American Forestry Association. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized July 11, 1918.



#### THE GLORY OF THE REDWOODS

Stupendous trees, venerable for their age, world wonders for their size, staggering to the imagination in their lumber content, beautiful as marble statuary in their symmetry. "And the great trees watch and wonder much. Surely a new race is coming on down there; men who measure their girth in love, not in greed. Through their branches the almost unbelievable message runs—These men worship God with us!"

# AMERICAN FORESTRY

VOL. XXV

NOVEMBER, 1919

NO. 311

## THE GLORY OF THE REDWOODS THREATENED BY FIRE

BY M. B. PRATT, DEPUTY STATE FORESTER OF CALIFORNIA

**F**OREST, range and grain fires have burned over larger areas and have caused more loss in California this summer than in many years. The fire hazard was especially high as early as July due to the small amount of precipitation in the spring months, high hot winds and an unprecedented host of vacationists in the mountains, a number figured by some observers as being twice the normal. With these conditions prevalent, it is remarkable that the fires were kept down as well as they were by government, state, county and private agencies. It was not until the latter part of September, when the first fall rains were expected, that a period of intense heat accompanied by strong north winds caused the small fires to become conflagrations in a short time. In spite of every effort, fires raged uncontrolled in different parts of the state for about two weeks and it was not until a general rain fell on September 27 that they were finally controlled.

The fires in southern California were the largest since the great fire of 1910 in the San Bernardino Mountains. Fanned by heavy winds, small fires in various sections of the Angeles National Forest escaped beyond control to form a continuous line of flame over thirty miles in length and ten miles in depth. A raging, roaring sea of flame raced through Pacoima Canyon, often called the most beautiful camping spot in southern California, destroying eight summer homes and the attractiveness of the place for many years to come. The \$100,000 ranch property of Cecil B. De Mille in Tejuanga Canyon was left a mass of black-

ened ruins. San Gabriel Canyon was also fire-swept and a number of cottages destroyed. At the same time fires in the San Bernardino Mountains were burning within two miles of the Los Angeles city playground, and threatening Squirrel Inn and Thousand Pines in the Rim of the World resort region.

On September 24, the Mayor of Los Angeles issued the following proclamation:

"There is raging in the Angeles National Forest Reserve, near this city, fires which threaten the entire area. We all appreciate the value of this forest. It is, from the standpoint of irrigation and flood control, priceless. It is our duty as citizens of Los Angeles to do everything in our power, to use all of the resources at our command, to co-operate with the local forest office to extinguish these fires. I feel that this fire may prove more serious to the present as well as the future generations than would a large fire in the heart of our city.

"Therefore, I request that every person who can in any way, independently or through organizations, collectively, get in touch with the local forest office and aid them in their efforts to extinguish these fires."

(Signed)

MEREDITH P. SNYDER,  
Mayor.

Forest Supervisor Charlton soon had twenty-five hundred men on the fire line, and the assistance of District Forester DuBois and other district office men from San Francisco. Airplanes and free balloons from March and Ross fields took observations on the fires, and the work became so well organized that much progress was being made in checking their spread at the time of the rain.

A preliminary estimate of the area burned over places it at 237 square miles, or 151,680 acres. The Forest Service probably spent \$50,000 for labor and supplies, and lost timber and watershed cover valued at as much more. The loss of property, including that of permittees



STILL STALWART AND STRONG

Although the base of this redwood is eaten out by fire and rot until it is hollow, the tree is so sturdy that it might and undoubtedly would, stand for generations to come, if untouched by fire.



is high, but the most serious consequence of these fires will be the damage which will result from the rapid run-off during the coming rainy season.

At the same time that southern California was experiencing the worst fires in its history, terrific fires were raging in the northern part of the state. On September 19, the most destructive fire that was ever experienced in Marin County, swept the slopes of Mount Tamalpais to the edge of Muir Woods before it was checked. In a few hours, more than twenty residences and summer cottages near Mill Valley were destroyed. A thousand fire-fighters which included detachments of soldiers from Fort McDowell and Fort Baker were needed to bring this fire under control.

While the Mill Valley fire was at its height, the fire in Hurricane Gulch that had previously threatened Sausalito, broke out again and swept down upon the water-front with irresistible force. The residents, exhausted from their long fight with the fire the night before, appealed to Mayor Rolph, of San Francisco, for aid. He dispatched a fire boat with thirty firemen at once, but by the time the boat had reached Sausalito the fire had burned a hall, five stores and a dozen residences. Five hundred soldiers and sailors were brought in from nearby posts and the fire was finally controlled. It is estimated that the property loss in the two Marin County towns from these fires exceeds \$200,000.

On September 20, a fire which was the result of slash burning on a lumber company's holdings in San Mateo County, swept into Santa Cruz County and entered the California Redwood Park. It was fought for a week by several hundred men, at one time coming within half a mile of Governor's Camp in the Big Basin, having claimed one hundred of the world's greatest trees. The big redwoods do not burn readily, but become weakened by brush fires about their bases and finally topple over with a great crash, carrying smaller trees with them.

"Great trees were falling all night," said Park Warden Dool. "When they fall they can be heard a mile and a half."

This is the first fire in Redwood Park in modern history. Many of the redwoods had been hollowed by previous fires—400 or 500 years ago—and so fell more readily before the flames.

"The redwoods that have fallen run to six feet in diameter and are from 250 to 275 feet high," said the Park Warden. "They were from 1,500 to 2,000 years old." An irreparable loss.

Rain came to the relief of the fire-fighters, but not until about five thousand acres had been burned over, including 1,600 acres in the proposed addition to the park. In San Mateo County, one hundred soldiers were brought from San Francisco to protect valuable private redwood and tan-bark oak holdings. The damage to the mature redwoods was not great beyond the falling of some trees through the further weakening of their fire-scarred butts. The greatest damage was through the burning of the intermingled Douglas fir and tan-bark oak, the value of which is estimated to be twenty-five dollars per acre.

The foothills of the Sierras were aflame during the latter part of September, a dozen or more fires being sighted in one day by the aerial patrolman from Mather Field on his daily round trip to Oroville. Placerville was surrounded by fires which deluged the town with falling ashes and cinders. Yuba, Nevada, and Placer County ranchers lost thousands of acres of dry feed and young timber, besides many buildings and



A WELL-KNOWN OLD BEAUTY—"JUMBO"

The great base of Jumbo—knotted and gnarled, the pride of the grove. These old trees made heroic resistance to the devastating fire which threatened their destruction in the early fall.

miles of fences. At this time, October 8, there is still a possibility of large fires unless rain falls shortly, since a heavy wind is rapidly drying out the moisture resulting from the previous rain. Fire reports show that the acreage burned over and the resulting damage has been greater than any year since 1910.

The lesson taught by these fires surely must have been learned by now. In commenting upon them an editorial



in the San Francisco *Examiner* of September 28, says in part as follows:

"We believe it would pay some prospective legislative candidate to make a serious study of the effects, in the past, of forest fires. He should get the facts of the actual money losses represented by these fires. He should become acquainted with the state's forest resources, the rates of use and the rates of renewal, and the enormous hole that is cut in these resources each year by fires.

"Mr. Homans, we feel sure, will be very glad to give him all the assistance he needs in acquiring such information.

"And then this prospective legislative candidate should make his election campaign on an issue of adequate forest protection and, when he is elected, should make a two-fisted fight exclusively on this issue. We believe he would win the attention of the entire state on such an issue. And if the state can once be aroused there is no question that the Department of Forestry of the State of California will get its rightful place somewhere near the center of the state's activities, instead of being considered, as it too frequently has been considered in the past, a sort of side issue."

Recent extension of the California State Highway system through Humboldt County, has made the magnificent redwood forests of the northern coast easily accessible to the lover of nature, to the tourist, and to important industries dependent upon forest products. This extended use of the highway coming at a time of unusual activity following the war, has brought us to sudden understanding of the value and interest of these forests as unique wonders of nature, and to realization of the imminence of their disappearance before the requirements of this great lumber-using country.

The Save the Redwoods League was organized to assist in bringing about a better and more general understanding of the value of the primeval redwood forests of America as natural objects of extraordinary interest as well as of economic importance, and for the purpose of bringing into unity of action all interests concerned with the movement to preserve such portions

of these forests as should be saved to represent their fullest beauty and grandeur.

The plans of the League involve: (1) The securing of a belt of the finest redwood timber bordering the northern highway, in the hope that this area may become a state park. (2) The obtaining of a considerable body of the most typical primitive redwood forest known, for the purposes of a National Redwood Park.

Determination of the precise limits of the particular areas to be selected for park purposes will be based upon a carefully prepared report furnished by the Committee on Redwoods Investigation, including the most competent authorities in America.

Mr. Mather has given himself wholeheartedly to support of the movement to preserve the redwoods, and in co-operation with a group of leading men representing all parts of the country, he is continuing to make clear to the public the national significance of these magnificent forests.

The movement to secure forest areas bordering the highway for purposes of a state park has received enthusiastic support from a wide range of organizations in California as well as from a great number of individuals concerned with the welfare of the state. It has been generally recognized that the redwood forests constitute a natural asset of this country to be ranked in importance with the great mountains and valleys as monumental works of nature. To have the northern highway traverse the groves along the streams means bringing the finest



A VETERAN, HOLLOWED BY THE AGES

This is the type which fell most readily before the flames, having been hollowed out and weakened by previous fires four or five hundred years ago.

of these trees to their fullest usefulness. There is reason to hope that the desires of those who have planned the preservation of these areas may yet be realized.

## CALIFORNIA'S REDWOOD PARK

BY ARTHUR A. TAYLOR, SECRETARY CALIFORNIA REDWOOD PARK COMMISSION

WHEN Uncle Sam was figuratively still sitting by the stove whittling and talking about the weather, unaware of, or indifferent to, the scenic and esthetic importance of his domain, the state of California awakened to the hereditary value of its redwood forests and bought back at a price a fragment of the inheritance the Federal Government had sold for a song.

Late in the last century it was perceived that the redwoods were rapidly disappearing before the demands of commerce and the ravages of fire, and after an active agitation a law was passed authorizing the purchase of a tract of virgin forest in the Big Basin, Santa Cruz County, to be preserved and protected "for the honor of the state of California, and the benefit of succeeding generations."

The redwood tree, as is generally known, lives only in California and a small part of Oregon. There are two species, the *Sequoia Washingtoniana* of the Sierras, and the *Sequoia Sempervirens* (ever-virile) of the coast ranges. It is the largest tree and the oldest living thing on the earth. Many of the redwood trees of California were saplings when Hiram of Tyre was hewing the cedars of Lebanon for Solomon's Temple, and these trees are not aborigines, but descendants of a long line of ancestors, contemporaneous with the mammoth and the mastodon.

A sound redwood log was found in a mine in the state of Nevada 1,900 feet underneath the surface of the ground and some of the predecessors of the present day trees are preserved in the petrified forests of Arizona. A few of the juvenile redwoods of our era attain a height of 350 feet, and a girth of 60 feet. There are hundreds of redwoods in the

California Redwood Park of 250 feet in height, in diameter varying from 12 to 15 feet—and these were the trees threatened by the recent terrific fires. These trees are growing on the site of prior forests wherein the trees attained dimensions double the size of those now living. This fact is attested by the root rings left in crater-like

circles to outline the trunks of trees which, after an unthinkable longevity have died and decayed—been absorbed by the soil and dissipated by the winds. These mute mementos of the giants of other days are quite as impressive as the majesty of the living trees.

California selected the Big Basin in Santa Cruz County for its forest reserve, not only on account of the size, abundance and beauty of its redwood trees, but for geographical and topographical reasons.

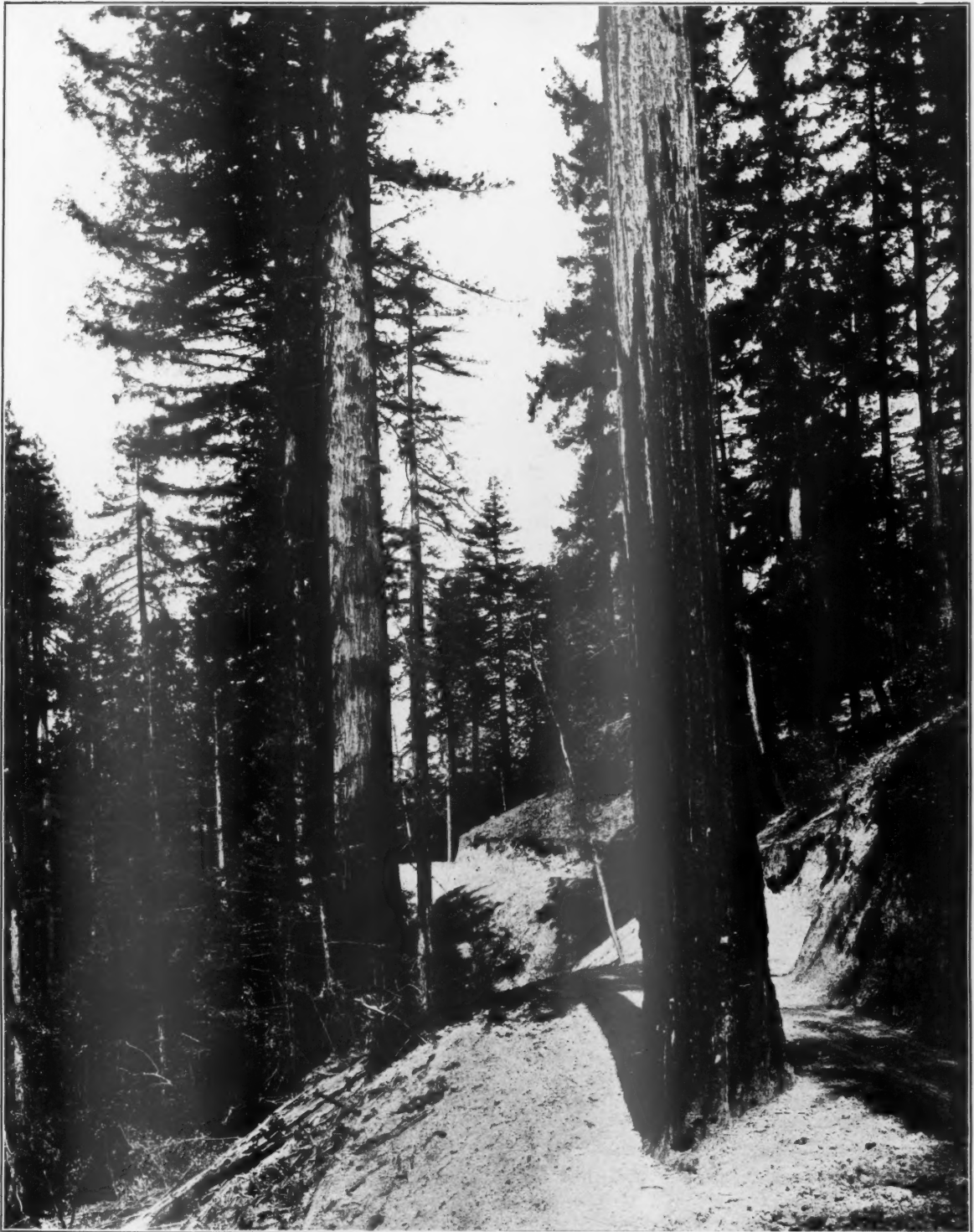
The park is easy of access from Santa Cruz, San Jose and Palo Alto, and within a three hours' auto ride from the cities about the bay of San Francisco. The Big Basin is an irregular fan-shaped area embracing about 14,000 acres surrounded by elevations of an average of two thousand feet above sea level. The dotted peaks about the margin range from 2,500 to 3,000 feet in height and the lowest gap of entrance is 1,600 feet. While these figures do not indicate high mountains, the altitudes are impressive because the ocean lies in view and the range of vision covers fifty miles or more landward, over a panorama of rap-turous diversity and beauty.

The main floor of the Basin where the largest and most interesting redwoods abound is at an elevation of 1,000 feet. Here are located at what is known as the Governor's Camp, the office of the Warden, and the Redwood Inn, with accommodations for visitors and campers.



GUARDING THE NEW GENERATION

Note the young redwood, offspring of the giant parent tree, guarded on each side by sentinel trees.



ALONG THE BEAUTIFUL AND INSPIRING REDWOOD TRAIL

Long ages before this road was built, these giants stood—sentinels on the hillside—awaiting the coming of man, when he should know and claim them as his own. To protect and preserve them for coming generations is now man's solemn duty.



Hereabouts is a grove of stupendous redwoods, venerable for their age, world wonders for their size, staggering to the imagination in their lumber content, beautiful as statues in their symmetry—many of them—others, grotesque of form, rugged of exterior, living witnesses of their conflict with the centuries, through fire and tempest.

"And the great trees watch and wonder much. Surely a new race is coming on down there; men who measure their girth in love, not in greed, taking the place of creatures they used to dread more than rot and disease, or blasting, consuming fires. Through their branches the almost unbelievable message runs—'These men worship God with us.'"

Although California's forest reserve takes its name from the redwood, the peculiar and prevailing tree, yet its value as a park is augmented by the fact that within its limits are to be found nearly every variety of forest growth peculiar to the Pacific Coast.

The other trees include firs, pines, oaks of several species, the madrono, buckeye, California nutmeg, manzanita, while the shrubs and flowers of the park run well into the hundreds, and under the fall-foliage are fungi gardens of exquisite, half hidden beauty.

These trees and this forest entrance the beholder, and uplift with a conscious awe and sublimity, not aroused by man-made temples or cathedrals.

It took Titanic power and aeons of Time to make this place. Dr. J. C. Branner, President of Stanford University and one of the most famous geologists of his day, finds fourteen formations in this area and nine distinct and far-reaching geological disturbances recorded in the rocks, leaving the strata folded and crushed, impossible of clear definition, but affording a reason for the marvelous fecundity and variety of the vegetation. This Basin as finally left for man is a series of ravines and ridges. The creeks are numerous, fed by living springs which gush forth from mountain sides at altitudes of from one to two thousand feet. These springs are, some of them, clear as crystal, and many of them are impregnated with mineral

substances. The stream that flows past the Governor's Camp is called Opal Creek, on account of its color, due to mineral content. A chalybeate spring, to the west, is large enough and strong enough to transform the brook into a stream of liquid gold.

It makes a fall of about 60 feet in a shimmering shower of gold, of a beauty altogether beyond expression in words. It soon reaches another drop of about equal distance, the water changing in transit into copper color. Again it falls as bronze and after flowing a few hundred yards leaps over another precipice, a sheet of silver.

When streams fall a thousand feet in a mile of distance it is inevitable that there should be numerous picturesque cascades and these form no small part of the charm of this woodland.

The California Redwood Park is not only a sanctuary and a sanatorium for world-weary men and women, but it is a haven of refuge for birds and animals. No guns or dogs are allowed within its limits, and deer and squirrels show no sign of fear.

As Virginia Garland expresses it in writing, the trees in Sempervirens Park are looking down on a different manner of men, and they no longer dread the ax and the saw.

When acquired by the state the forest of the Big Basin was inaccessible except on foot or on horseback over a trail dating from the days of Indian occupation, and it required as much time to arrive from the town of Boulder Creek, twelve miles distant, as it does now to make the run from San Francisco in



THE FAMOUS SANTA CLARA TREE

Awe-inspiring and impressive these giant trees stand—the oldest living things on earth—an ever-new source of reflection to men.

an automobile. The park is now reached over a well graded road from Santa Cruz via Boulder Creek, or from the Santa Clara side over the new state highway via the town of Saratoga, opened in 1915. An auto stage runs from Boulder Creek and also from Saratoga during the season. Private automobile tourists usually enter by one route and return by the other.

It is no disparagement of the forest or of the wonders of the redwoods to state that the trip thither is perhaps as attractive and compensating as time spent in the com-

panionship of the great trees. Travelers who have toured France and Switzerland and have had wide experience in estimating scenic values, declare that the charm and beauty and picturesqueness of this trip is not excelled. The scenery of the Santa Cruz Mountains approaches grandeur but it is not overawing. It is kaleidoscopic, a new angle of vision revealed at every curve in the road, but all its lines are graceful, its aspect never void of beauty.

The summit above Saratoga is gained at an altitude of 2,700 feet at Fairview. Here a most entrancing panorama is spread. Facing eastward, at your feet lies the

Mountains descending oceanward. The panorama appeals instantly to the artist. Comprehensive in its fifty miles of compass, sublime in its heights and depths and distances, exquisite (we use the word advisedly) in the tinting of the landscape, bringing within the vision the astronomical, agricultural, commercial, educational and industrial glories and beauties of Central California.

From this point to the heart of the forest is not more than five miles as the crow flies, but it is fifteen as the park highway runs, on uniform grades from four to six per cent. The right of way is 200 feet in width and forms a pan handle to the park, being under its juris-



THE TWIN GIANTS—OHIO AND HAVERFORD IN THE MARIPOSA GROVE

These two are among the most notable trees in the grove. The view of the cabin through the opening in the base of the Haverford and the whole condition of this tremendous base is not only most impressive but most convincingly indicates the great age of the tree and its mates.

Santa Clara Valley, town dotted, orchard checked, varicolored with trees, pastures, grain fields and the habiliments of a fertile valley. Beyond rises Mount Hamilton, crowned by the Lick Observatory, and to the northwest Mount Diablo. Northerly a clear day will give glimpses of the intruding bay of San Francisco, or if this is fog shrouded, the imagination can complete the suggestiveness of the picture. Facing westward before you are the seamed, sloping, evergreen ridges of the Santa Cruz

diction. Northerly along the crest of the mountain the road flirts with the boundary line between Santa Cruz and Santa Clara counties, alternately disclosing expansive views seaward or valleyward, an exhilarating experience to the sightseer. It then bends down the mountain side descending until it reaches the gap which marks the divide between the waters flowing to the Pescadero and those reaching the bay of Monterrey at Santa Cruz. Continuing its winding it ascends to an altitude of 1,900

feet when it passes over the rim of the Basin, to reach its destination 900 feet lower at the Governor's Camp.

The way is partially through tall timber, partially along the open rock ribbed mountain side with outlooks upon the canyon of the San Lorenzo River and its tributaries, upon mountain peaks and ridges, and at favored points peeps of the Pacific extending to the horizon, a sea of molten gold, under midday sun, or a dim grey haze when cloud-veiled or fog-covered.

A guide post directs to a near eminence from which one may look down into the slopes and depths of the untouched, untraversed redwood forest, covering thousands of acres, beneath the eye. An evergreen sea more impressive than the one made of water, which impinges against the westward horizon.

If it is early season, the water courses will be outlined by billows of blooming azalias, with here and there a flash like fire, coming from some Tiger lily which has

### THE GIANT REDWOOD

By M. J. Riordan

When Babylon was riotous thy head  
Was wise with years; when Bonaparte on cold  
Helena's rock lay still thy heart was bold  
As youth against the storm; no hair has fled  
Of all thy leafy locks through age; the dead  
Since thou wert young have swept in ranks untold  
To immortality; straight as of old  
Thou wait'st the generations still unbred.  
Why build we monuments of crumbling stone  
Or tawdry brass and bronze to mark a name  
And spare mere memory to unheeding time?  
It were far sweeter, though to be unknown,  
To rest beneath green trees. Could marbled fame  
Sleep softer bring though graved with sacred rhyme?

caught a sun ray. If you tarry in the park you can camp at your pleasure without cost, or abide in the inn at reasonable rates. Lodgings are in tents or cabins. At night a huge camp fire is a common meeting place, where song and story always abound.

Tomorrow you can take a hike over some trail through the recesses of the forest, following a stream, or climbing a ridge. The next day this experience may be duplicated in another direction, and there is distance and diversity enough to make a week seem short, especially if you are fond of locomotion by "shank's mare."

To the unaccustomed eye the trees look alike and the wildwood has a uniform aspect as a city seems like "all buildings" to the countryman, but when you get the Indian vision of the forest, you will discover that every tree has an individuality as distinct as that which distinguishes men and women. You will soon be striking friendships with these people of the woods, and find them companionable, the most soothing, restful, inspiring personalities you ever met. Every rill and ripple of flowing water, every cascade and rapid has a melody of its own,

but blending in a unison which is in tune with the Infinite.

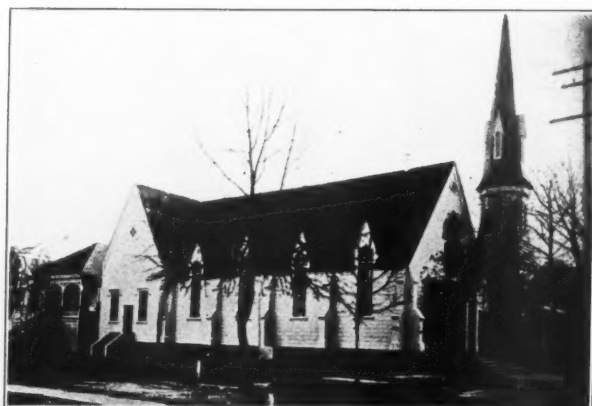
The lumberman gazes with amazement upon the acre of standing timber, good for half a million feet of lumber. He computes the contents of a single tree which could be converted into ten cottages, and he is glad that these trees have been saved for him to see.

The true Nature lover finds every foot of this temple soil sacred. He walks with bared head, his vision is rapt, his voice is seldom heard. And the joy of it all is that this woodland, wonderland, is to be preserved, saved, perpetuated.

### CHURCH BUILT FROM ONE TREE

BY H. E. ZIMMERMAN

**I**N Santa Rosa, California, is a Baptist church which will hold 400 people, built entirely from timber sawn from a single redwood tree. Everything used in the construction of this church was furnished by this one tree with the exception of the necessary glass and hardware. The spire is 100 feet high, and there is a pastor's study 12 x 20 feet, as well as a vestibule, toilet room and parlor



THE REDWOOD TREE CHURCH

seating 100 persons. This church is 60 feet wide by 100 feet long, and cost \$5,000. Only two-thirds of the tree was needed for the necessary lumber. After the roof was finished it was found that there were 60,000 shingles left over. A sister tree to this one furnished employment for two years to two men in reducing it to shingles.

### A CHRISTMAS SUGGESTION

Are you puzzled about the selection of Christmas gifts?

Why not give a year's subscribing membership in the American Forestry Association as a gift. It will cost you \$3.00, and the member will receive American Forestry Magazine for a year.

This will be an ideal Christmas gift for a child or an adult.

Send the money to the Association and a Christmas Card will be sent you to present on Christmas Day.



## THE FOREST CODE AND THE REGIME FORESTIER

BY W. B. GREELEY, LIEUT.-COL. OF ENGINEERS, U. S. A.

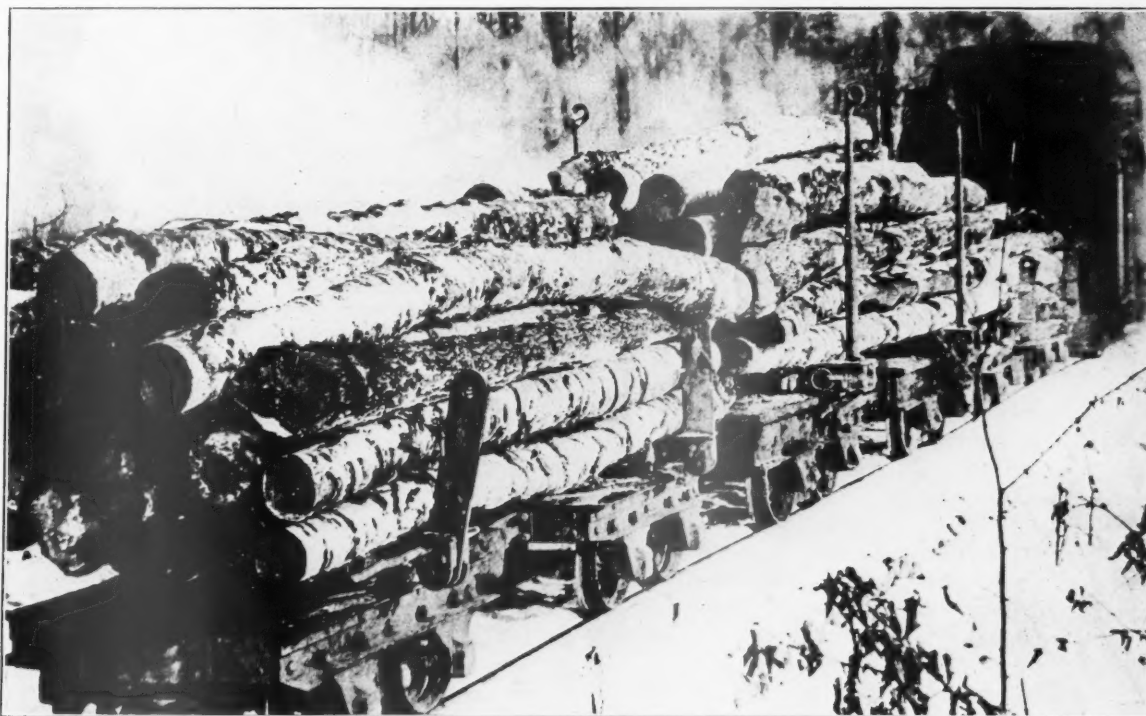
THE "regime forestier" means to the French the sum total of laws and administrative decrees applicable to forests under all forms of public ownership. It thus actually governs about one-third of the forested area of France; but the public administration of this third, affording opportunity to standardize and demonstrate cultural methods in every section of the country, is the core of French forestry.

The requirements and protection of the "regime" extend to all state forests, to all communal forests which are adapted to forest management, and to the forested properties of public institutions like hospitals, charitable organizations, and ecclesiastical foundations. They may be extended to communal lands whose reforestation is deemed desirable by the Government. They are applied automatically to all forests and planting areas within the limits of national projects which are undertaken for the stabilization of sand dunes or for the checking of erosion on mountain slopes. They may be extended to private forests at the voluntary choice of the owner, but otherwise have no direct application in the handling of timbered lands in private ownership.

The basis of the "regime forestier" is the forest code of France, which stands today in substantially the form in which it was adopted in 1827. This detailed and com-

prehensive code is deeply rooted in the forestry laws of the old imperial days, particularly in Colbert's Ordinance of Waters and Forests of 1669, which dealt minutely with waterways, fishing, and hunting as well as with forests. Many penal provisions of the forest code are taken bodily from Colbert's Ordinance and preserve—in the liberty-loving France of today—much of the harsh and arbitrary conceptions of penal law characteristic of the times of Louis XIV. In this as in other respects, the code is a striking expression of the French attitude toward their forests—as a resource which the common law alone is inadequate to conserve and protect. Because of the ease with which the productivity of forests may be impaired, because of the long time required to restore it, once reduced, and because of the far-reaching public and economic interests at stake, forests stand apart from other forms of land and require a special code exceptional in its restrictions and in the severity of its punishments. French discussions of the code refer constantly to the necessity for restraining the "jouissance" (enjoyment or use) of forests by their owners in order that their national utility may not be destroyed. Nothing else in French jurisprudence is comparable to this body of special laws created for the conservation of their forests.

The "regime forestier" is applied today to about



A FRENCH LOGGING RAILROAD

These railways of 60 centimeter gauge (24 inches) are quickly built, the rails and ties being light. Somewhat similar roads were built for carrying ammunition and supplies to the troops and where there were woods they were easy to hide from enemy observation.

7,870,000 acres of forest in France, not quite one-third of her total forested area. 3,000,000 acres of this amount are the property of the French nation and their management sets the standards of public administration. The history of these state forests reflects the ups and downs of the fortunes of the French kings, of her political upheavals, and of her changing economic theories. Large forests in northern and eastern France were undoubtedly properties of the Roman emperors and were held later by the Frankish kings by personal right of conquest. The later kings, as the first feudal lords of the realm, held numerous forest domains usually burdened with old rights of usage acquired by the local rural communities. Forest ownership, in fact, became an attribute of royalty and nobility and was sought by the dominating classes of the feudal and imperial regimes as a bulwark of their prestige in the state. It still carries the stamp of social prestige in the French provinces—an inheritance from the days when the possession of large hunting preserves was a coveted distinction of the grand seigneur. In the course of the centuries the royal forests went through numerous vicissitudes from conquest, marital transactions, cessions to rebellious or lukewarm nobles, and grants to royal favorites. Certain of them became in time the property of the state, others remaining in the personal possession of the reigning family.

One of the first steps toward the conservation of public forests, which is of special interest in view of the seeming indifference of the times toward the future, was the Edict of Moulins in 1566, which declared that all forests owned either by the state or by the king in his own right were inalienable and—by inference—protected from prescription or seizure under any color of claim whatsoever. Although this decree was often abused by the kings themselves, through various fictitious engagements or contracts which amounted to the alienation of public forests, it undoubtedly had a conserving influence up to the time of the French Revolution.

With the outbreak of the Revolution, the royal forests were declared to be the property of the state. A law of 1789, placing all church property at the disposition of the nation, resulted in adding considerable areas of forest

to the public domain. Three years later the forests owned by emigres of the old nobility were confiscated by the state—but most of these were subsequently restored to their former owners. The first effect of the Revolution was toward the nationalization of forest resources, but counter currents soon set in. In the reaction from the abuses and usurpations of the seigneurs of the old regime, the rural communes were encouraged to take possession of forests under almost any pretext based upon entailed rights or old claims. The confiscated properties of the king did not escape, and the state lost heavily from the inroads of the communes into its newly

acquired forests. The Edict of Moulins was also formally repealed and large areas of state forest were sold outright under the individualistic economic theory of the times. The recorded sales of hardwood forests in central and northern France, for example, probably the most valuable part of the public domain, aggregate 880,000 acres. It is significant that every French Revolution was followed by fresh disposals of state forests. From the Revolution of 1789 to the establishment of the Third Republic, the attitude of the French toward their public domain was strikingly similar to that in the United States during the period of active disposal of its public lands.

Under the Third Republic, the policy of France has turned definitely and aggressively in the opposite direction. Alienations of national forests have been restricted practically to small areas granted to various communes as a means of liquidating long-established entailed rights, or privileges to take timber and fuelwood for domestic use. On the other hand, the state forests have been enlarged by plantations in the sand dunes and by the purchase and reforestation of mountain areas in connection with projects for the control of erosion.

A most interesting phase of public forestry in France and one of special suggestiveness to America is the communal forest. The French commune is comparable to the New England township—a self-governing, rural community of exact geographical limits. The feudal system developed a peculiar solidarity of interests among the members of these little communities. The system of



AT WORK IN OAK COPPICE

Many of these French workers still in uniform are engaged in chopping wood for fuel to aid in overcoming the coal famine in France this winter.

entailed rights in the royal and seigneurial forests developed largely from the sheer necessity of meeting the needs of the local agricultural population for wood—for fuel, farm buildings, and implements. Entailed rights were usually held and exercised by the villages of serfs or tenants in common. They became community rights,

The communal forests in France today aggregate more than the holdings of the state itself. And under the terms of the forest code, the great bulk of them are administered by the national service in accordance with the requirements of the "regime forestier." In other words, they form part and parcel of the public forests

and meet the same needs in national economy as the timberlands owned by the central government.\* The communal forests still serve their original purpose of furnishing supplies of wood for local use, particularly fuel. But under the careful supervision of the national forest service, they also produce quantities of large timber which are utilized for the general requirements of France. They furnished a fifth of the timber cut by the American Army. Some communes own and operate their own small sawmills. These forests are an important source of revenue for hundreds of French villages, reducing taxes and affording the means for constructing town halls, roads, and other local improvements. The situation in France would be paralleled if every village in New England or the Lake States owned 500 or 1,000 acres of forest, kept con-



ROAD THROUGH A FRENCH STATE FOREST

A great deal of care and attention is given in France to the building and maintenance of roads, one of the features of France with which the American visitor is impressed.

so firmly established as to be a fixed and accepted factor in the forest legislation of France from its earliest development.

In the breaking-up of the feudal system and the overturning of the old order under the Revolution, these little communities asserted their old rights and claims so vigorously as to acquire many small tracts of forest and pasture land in fee simple. The history of the communal forests is a complicated one. Their acreage has been swelled from various sources, including community purchases in some instances. Following the Revolution, the acquisition of forests by the communes was largely antagonistic to the slowly developing policy of national conservation. But during the past half century, French policy has aimed steadily to harmonize and correlate the two forms of public ownership. Following the success in controlling sand dunes on the southwestern coast, the planting of many communal holdings in the sand plains of the Landes was required by special legislation, with state supervision and aid. 185,000 acres of communal forests were created outright by this co-operative enterprise. A somewhat similar policy has been followed in the French Alps as part of the effort to protect mountain slopes from erosion.

tinuously in the best state of production, furnishing the timber locally needed, affording a substantial revenue for community purposes, and providing means for the steady employment of a number of its workers.

The forest code establishes the principle that all public



A CAMOUFLAGED ROAD

The French were particularly skillful in hiding their roads from the enemy flyers so that their transports to the front could continue without attention from the enemy artillery.

forests must be placed under a definite scheme of management, the main point of which is to fix the amount of wood which may be cut yearly without reducing the growing stock, or capital, and to prescribe the method of cutting so as to maintain the productivity of the prop-

\* There are practically no forests in France owned by the Departments, the political divisions corresponding to states in America.



erty. It is significant of the importance attached to the handling of public forests by the French that each forest plan must not only be approved by the high council of the Service des Eaux et Forêts and by the Secretary of Agriculture, but must also be authorized by decree of the President of the Republic. Board rules of management are laid down by ordinances supplementing the code itself. In administering the communal forests, the highest monetary return is the main consideration. The function of state forests, however, is declared to be the supplying of national industries with the classes of products which they most need, particularly large timber which may not be grown on communal and private forests because it may not pay the highest returns. The purpose of state forests is thus to supplement, as may be necessary, the materials produced in the largest quantities by communal or private owners with choice timber whose growing is long and costly. As a matter of fact, these distinctions have largely disappeared under the free working of economic laws in fixing the price for various classes of timber.

The working plan for the state forest of Gerardmer, one of the areas cut by the American engineers, illustrates the extremely interesting but simple technical methods of the French service. This is a forest of fir, spruce, and beech in the high Vosges. A revision of the old plan had been made necessary by serious windfalls and failure to cut the old timber at a sufficient rate (a characteristic result of French conservatism). The new plan begins with a resume of revenues during the past twelve years,\* including the lease of quarries and of hunting and fishing privileges, the sale of tree seed and seedlings, and rents from mountain meadows for pasturage. Then follows an exact estimate of the stumpage, in two classes—large timber and immature or middle-aged timber. The normal growing stock (to be maintained without diminution) is fixed at 350 cubic meters per hectare, or about 29 thousand board feet per acre. This figure is not based upon calculations for the forest but upon general experience in forests of this type in the Vosges. In the same way, the yearly growth of the large timber is estimated at 5 per cent and of the smaller timber at 2 per cent. By these simple methods, the annual "possibilite," or permitted cut, is placed at about 785 board feet per acre, a figure which is to be exceeded for a time in order to remove a surplus of old growth.

The bulk of the plan is devoted to an exact description of the various divisions of the forest, as marked out on the ground, with the order in which they are to be cut during the ensuing thirty years. The entire forest is to be worked over in that interval under the selection method, which consists essentially in removing the larger trees to a number not exceeding the prescribed limit each year. The working plan terminates with a detailed allotment of funds for maintenance and improvements during the same period. These include the construction and repair of roads, the upkeep of five state sawmills, planting designated blank areas, cutting out brush which is

covering young trees in places, and maintaining a small fish hatchery.

The French state service manufactures its own stumpage to but a very limited extent. The lumber or logs, in such cases, are sold at auction. The great bulk of public timber is sold on the stump, following advertisement by printed circulars specifying the exact areas where cutting will be permitted and the estimated quantities to be removed. The sales are made by lump sum for the marked timber on a stated "coupe" at public auctions, in which the crier begins by naming a price far in excess of the value of the timber and then reduces it successively until he finds a taker. The forest officers seldom scale the logs after cutting, as is done in the National Forests of the United States. This is a weak point in their system, both because of the speculative element in sales based upon estimate only and because of the failure to obtain a definite and authoritative check upon their estimates.

As would be expected, the cutting is subject to extremely rigid rules enforced by heavy penalties. These are standardized in published regulations and are so thoroughly ingrained in the lumbering practice of the country that little difficulty is experienced in their enforcement. One of their interesting features is the requirement that operators furnish stated amounts for repairing the roads used in logging, for the maintenance of their splendid system of forest transportation is one of the most jealously guarded features of administration. The whole system of cutting in small lots scattered over a forest in accordance with the requirements of its working plan depends upon the highway system. As much as three per cent of the purchase price may be exacted for the upkeep of roads.

The French administrative ordinances contain detailed stipulations for secondary uses of public forests such as the extraction of resin, the barking of cork oak, the pasturing of grasslands, the operation of quarries, and the removal of peat or of sand and earth for industrial purposes. Such uses are permitted under a leasing system operated by the forest service. The rights to sub-surface minerals, however, are entirely distinct from the ownership of the land; and their development is controlled by a separate group of laws. These are applicable to all forms of land ownership in the country and are of interest to Americans in contrast with the mining laws of the United States and the innumerable complexities which they have interjected into our public land system. No land owner in France has, per se, any title or claim to subterranean mineral deposits; and conversely the holder of mining concessions has, in virtue of that fact, no right to the surface of the land beyond the areas actually used in his operations.

The ownership of underground mineral resources is vested in the French nation. The owner of the land may prospect for minerals as he pleases and may concede prospecting rights to others for any consideration which he chooses. Prospecting privileges can be obtained by outsiders on any land in France, regardless of its ownership, by administrative decree. Such decrees are issued

\* These averaged about 73.5 francs per hectare yearly, or \$5.75 per acre.

upon the recommendation of the public Engineer of Mines and after the owner of the land has been given a hearing. They are usually limited to a period of two years and provide indemnities to the owner for injuries to the surface of the property. Mining concessions, following a mineral discovery, are awarded by decree of the State Council. The procedure for obtaining them is a complicated one. Hearings must be given to the owner of the land and to adverse claimants of the discovery; a detailed investigation of the merits of the discovery must be made by the National Department of Mines; and many restrictions as to the proximity of mining operations to buildings, enclosures, etc., must be observed. The owner of the land has no preferential rights to mining concessions; his claim, if one is made, must be based upon priority of discovery. The terms of each decree fix the

It has often been used as an argument against the alienation of public forests and in support of legislation for retaining public control of forest areas in one form or another. Although the wooden frigate has disappeared from the seas, the special provisions of law designed for its protection still hold. Representatives of the navy may put their special mark on any trees included in sales of public timber, which are needed for naval construction. The purchaser of the "coupe" must then cut and limb these trees without reimbursement. The navy takes possession of them in place and buys them from the Forest Administration under a scale of prices which is fixed from time to time by a special commission.

The most complicated and, in certain respects, the most significant features of the forest code of France are its penal provisions. As I have pointed out before, zeal for



GATHERING FUELWOOD IN A FRENCH FOREST

Whereas in the United States the removal of slashings after cutting of timber is an item of cost to the lumberman, in France people pay for the privilege of going into forests after a cutting in order to gather fagots. Gathering and sale of fuelwood is a regular industry.

duration of the mining concessions and the indemnities to be paid to the owner of the surface. These, in principle, are equivalent to double the normal income from the portion of the land which the mining concessionaire will occupy.

The old solicitude for an adequate supply of large timber for the French navy has an interesting survival in modern French legislation, although the practical necessity for it has largely disappeared. It recalls the days when the broad arrow of the English king was stamped upon the finest trees in the forests of New England. Dating from the forest legislation drafted by Colbert in 1669, the assurance of an abundant supply of large timber for the navy has figured largely in French forest policy.

forest conservation in France has resulted in, carrying over into her modern penal code many of the harsh and arbitrary provisions of the "ancien regime." A fixed schedule of fines and imprisonments is applicable to violations of the forest code upon the sole verification of the fact that an offense has been committed. Considerations of good faith or mitigating circumstances are excluded. This rigorous protection of the public forests is taken almost bodily from Colbert's ordinance drafted in the middle of the seventeenth century and has resisted every attempt at sweeping revision because of the deep-seated conviction in France that forests stand apart from other matters of public concern and require extra legal measures for their preservation.

The maze of detailed prohibitions and penalties in the penal sections of the Forest Code is bewildering to the foreign student. Yet they throw much light upon French conceptions of forest conservation. For example, the code provides not only for penalties to the state (fine or imprisonment) and civil damages to the owner of the land for tangible loss or injury to his property but also for damages to intangible interests such as the disruption of a plan of management. The innocent trespasser who cuts green trees pays a fine, the commercial value of the stumpage cut, and a further sum representing the value of the trees to the owner for further growth and seed production. The fine for cutting trees over 20 centimeters in circumference is 50 centimes for each tenth of a meter of circumference for each tree, in the case of most hardwoods, and 25 centimes for other species. A lower fine is imposed if trees less than 20 centimeters in circumference or if limb or branch wood are cut. For every tree cut which has been planted or sown by hand, the fine is three francs, together with obligatory imprisonment for one month. The distinction between planted and naturally grown timber, however, ceases after the trees become over five years of age. If the wood is removed from the forest, added penalties are imposed of ten francs for each wagon-load, five francs for a pack-load upon an animal, and two francs for a man-load of fagots or poles. The difficulty in estimating intangible damages has led to the adoption of the rule that such damages shall be adjudged as not less than the penal fine. They may be as much more as the owner can establish to the satisfaction of the court.

While the admission of mitigating circumstances is forbidden, the courts are compelled to impose severer penalties in cases where an offense is repeated within twelve months, when it is committed at night, and when illegal cutting is done by the saw. In the last two instances, the purpose of the more severe punishment is to discourage trespasses under circumstances which render them difficult of detection. The difficulty of the forest service in preventing unauthorized grazing and the stress placed upon injuries to forest reproduction by grazing have led to exceptionally severe penalties for offenses of this class, involving obligatory imprisonment in most cases. This extends even to swine herders who have purchased grazing rights to acorn masts but whose pigs stray beyond the designated areas. The unauthorized introduction of animals into areas under the "regime forestier," whether they graze or not, is subject to an arbitrary schedule of fines. These range from 25 centimes to one franc for each pig, sheep, or calf and from 40 centimes to two francs for each ox, goat, or beast of burden. And it is especially noteworthy that the fines are doubled if the animals are discovered in woods under ten years of age.

The obvious principle of the forest code is to take no chances. Any person found in a public forest off of the ordinary roads with wood-cutting tools in his possession is liable to a fine of 10 francs and confiscation of his outfit. Counterfeiting the official marking hammer of the state service is punishable by forced imprisonment for

twenty years. A series of protective zones is established around the exterior boundaries of all public forests. Within 500 meters, no workshops, yards, or factories which fabricate or trade in wood can be established without special authority. Within a zone of 1,000 meters, furnaces or fuel-using factories are similarly excluded; while sawmills are forbidden within a zone of 2,000 meters except under permit from the forest service. The intent of these drastic restrictions is to prevent the existence of commercial establishments in locations where timber cut illegally might be quickly or readily consumed, disposed of, or changed in form so as to render detection of the trespass difficult. The penalties for unauthorized establishments within the prohibited zones are fines ranging up to 500 francs, enforced demolition of the structures, and, in extreme cases, confiscation of the timber found in them from whatever source. When sawmills are authorized within the 2,000-meter zone, they must notify the forest guard of each lot of logs which they are to receive and hold it for his inspection and marking before it can be manufactured.

It requires but very slight acquaintance with the personnel of the French forest service to appreciate that this penal system is far more onerous on the statute books than in actual enforcement. While the laws and penalties savor of the seventeenth century, their present-day application is eminently human and modern. This could not be otherwise in view of the tact and diplomatic skill of the French forest officers, practically all of whom, rangers and guards included, receive special training for their functions; and particularly in view of the personal individualism and latitude with which the French official usually handles his local situation. Particularly during the last fifty years, the Service des Eaux et Forêts has sought to overcome the antagonism of local populations to the state forests and forest policy; and the terrifying list of penalties represents today a latent measure of last resort rather than an active instrument in current administration.

This practice is, indeed, strongly supported by provisions of the Forest Code itself. One of the characteristic expressions of French temperament and administrative instinct in the code is the wide authority given to administrative officers to compromise its violations. Before judgment is rendered, such compromises can dispose of the entire matter, even when the offender is liable to imprisonment. Following a judgment, pecuniary penalties only can be compromised. The Forest Conservateurs, who are usually in charge of a Department, can compromise cases where the fines and damages do not exceed 1,000 francs. Even the most serious violations of the code can be settled out of court by the Secretary of Agriculture. In actual practice, by far the larger proportion of trespasses and other offenses are disposed of in this direct fashion.

American foresters find special interest in the provisions of the Forest Code dealing with fire. To light a fire within 200 meters of any forest under the "regime" is prohibited, except on the part of the owner or of per-



sons authorized by him, or in the case of fires necessary in the exercise of public franchises. A fine of from 6 to 10 francs is imposed for refusing or neglecting to render aid in fighting forest fires when called upon to do so. The French point of view toward forest conservation is well illustrated by the provision that while the incendiary firing of cut forest products is penalized by imprisonment at forced labor for limited periods, an incendiary fire in a forest is punishable by imprisonment at forced labor for life.

A special fire code has been developed by recent legislation for the forests of Maures and Esterel, bordering the Mediterranean coast, whose dry conditions and consequent fire hazard are comparable to our southwest. All owners in this region are prohibited from the use of light burning to destroy underbrush, a practice formerly common in connection with the harvesting of cork oak bark. All fires within 200 meters of any area of forest or brush land are forbidden, on the part of the owner or anyone else, from June first to September thirtieth. The Prefet (Departmental governor) alone may, upon the recommendation of the Forest Conservator, permit charcoal burning or fires for other industrial purposes within the restricted areas during this hazardous period. Any owner of forest or brush land in this district can compel an adjoining neighbor to clear and maintain jointly, at the limits of contiguous holdings, a fire trench which must be kept clean of herbs, brush, and resinous trees. In default of a friendly agreement, the width of such trenches, within limits of 20 to 50 meters, is fixed by the prefet. This law has been widely employed by the state to protect the borders of public forests. Similarly, railways traversing forest or brush lands in this region can be required to clear and maintain fire breaks 20 meters wide on each side of their right of way. The railroad must make its own settlement with adjoining land owners who are affected. One of the most interesting and constructive features of the fire code for southwestern France is the offer of state aid to communes in the construction of roads designed to complete the system of fire defense. The assistance offered is 3,000 francs per

kilometer of road, probably half of the average cost of construction. The real value of the "regime forestier" to France does not consist in its elaborate and painstaking legal code. It can be gauged only in appreciation of the administrative skill of the French, of their practical genius for co-operation, and of the high intelligence of many elements in the rural population of the country which has resulted in extending the technical practice in public forests far beyond their own limited area. The public forests form but a third of the forested land in France. But they and their staff of trained officers are present in every section. Their administrative methods set the standards, and their results demonstrate good forestry practice to every timber owner in France. How to cut and

reproduce timberlands has thus become common knowledge. It is the rule to find the local Conservateur des Eaux et Forêts the recognized authority of his Department on forestry matters, the leader in discussions of its local problems, the adviser of forest owners of all classes who come to him for counsel. This process has led indeed to forms of direct co-operation, in the special recognition given to associations of forest owners and in the opportunity to place private holdings under the technical methods and legal protection of the "regime" at cost. The "regime forestier" is thus the core of French forestry.

This fact points out a clear road to the United States. In the beginnings of our forestry development, public forests under technical administration should have a dominant part. They should be present in every section. They should be identified with its local problems of fire hazard, of timber growth, and of provision for future needs. They should develop the silvicultural practices adapted to our varied types of forest and make them common knowledge by concrete demonstration, the most effective of all educational measures. We will do well to adopt on a large scale the admirable French institution of communal forests. We need State Forests in every state and we need a large expansion of our National Forests, to include every forest region in the Union. In democratic America as in democratic France, a corps of public forests will be the key to effective progress.



CHARCOAL PRODUCTION

This is an important forest industry in France and is a means of utilizing a great deal of small material. In the French forests because of this close utilization, very little is wasted.

## A TRIBUTE TO DR. J. T. ROTHROCK

**F**ORESTERS all know and honor Dr. Rothrock for his life-long devotion to forestry and to public service.

The State of Pennsylvania owes to him the original establishment of a free sanatorium at Mont Alto for the open-air treatment of tuberculosis. This project, dating from 1902, has grown under the encouragement of the State into a large and efficient hospital, and is being managed and supported by the State, through the Department of Health.

Dr. Rothrock's fellow-members in the Chester County Medical Association, with the co-operation and support of the State Department of Health, arranged for the placing of a bronze tablet on a large boulder in front of the ward for children at the sanatorium, and appropriate exercises were held at the sanatorium on Thursday, October 9, 1919.

There were present at this meeting a number of Dr. Rothrock's friends and admirers and addresses appreciative of his great record of altruistic and self-denying devotion to public service were made by Colonel (Dr.) Edward Martin, Commissioner of Health of Pennsylvania; Dr. Henry S. Drinker, President of the Pennsylvania Forestry Association; Dr. Lewis H. Taylor, of Wilkes-Barre, and Dr. Joseph Scattergood, Chairman of the delegation from Chester County, who presided at the ceremonies.

The inscription on the tablet reads as follows:

Joseph Trimble Rothrock, M. D.,  
Botanist, Soldier, Explorer, Pioneer in the cause of Forest  
conservation in this Country  
established the first free Sanatorium  
for the open-air treatment  
of Tuberculosis in Pennsylvania  
at Mont Alto in 1902.

This tablet was placed here  
as a token of Honor and  
affection by his fellow-members  
of the Chester County Medical  
Society in 1919.

In responding Dr. Rothrock spoke as follows:

Few, if any, public institutions, which have achieved success, owe their origin to those in whose hands they came before the world. This great sanatorium is no exception to the rule.

In 1877 a legacy left by F. Andre Michaux to the American Philosophical Society, for the promotion of Forestry in America, became available. There was in Philadelphia, still active and vigorous, a venerable, distinguished member of the Philadelphia bar, a life-long, public-spirited citizen, the Hon. Eli K. Price, who had for years witnessed with anxiety the ruthless waste of our forests. He had recognized the fact, as few others had done, that we were destroying the proper proportion of forest to cleared land, and dooming a large portion of the state to a barren condition. He, at once, called that legacy into use, and had instituted a course of lectures in Horticultural Park in Philadelphia, which became popular under the name of the Michaux Forestry Lectures. It is well to note that at that time the word "forestry" hardly appeared in our American dictionaries. Those lectures became one of the most active forces in leading up to the Pennsylvania Forestry Association, which was the direct cause of the creation of the State Forest Reservation Commission in 1893, which Commission has developed, or led, to the development of our splendid State Forest Reserves. The original impulse was due to the Hon. Eli K. Price.

Your speaker was, in 1901, the head of the Forestry Commission. The fresh air treatment of tuberculosis was then partly possessing the public mind. It was nothing new to me. I had imbibed it from my youth up, for my father, an honored country doctor, had, a half century earlier, made the discovery that those of his tubercular patients who lived most in the open-air, lived

longest. I had noted, in 1873-74, the effect of open air upon two tubercular patients under my care in an exploring expedition operating in the mountains of Colorado. The thought flashed upon me that I had under my control, as Commissioner of Forestry, 600,000 acres of State land, which by right of purchase belonged to the citizens of this State! Why, therefore, should any of them be deprived of a chance for life because he could not go to Colorado? In my travels I had learned the common report that on this mountain no case of tuberculosis had ever developed, though on the other side of the valley it was rife. Was it true? If so, what was the cause?

Without warrant of law I determined to make a trial here of a camping ground, to which the sufferers might come, board themselves, and drink our pure water and inhale, without cost, the fresh air that belonged to them. Such, in 1903, was the origin of this camp. There is still here, in the capacity of matron, one of the two first owners, a lady whose husband, Mr. Andrew Klee, was restored to fair health, only to die several years later by a heart trouble. The success and the popularity of the camp led to the question—how was it to be maintained? We had not a penny of aid from the State. There was none in sight from any source!

"In 1903 there was a meeting of the State Federation of Pennsylvania Women in Carlisle, at the close of which a large number of delegates visited the camp." As a result of this visit, Mrs. Scarlett, then vice-president of the Eastern District, was enabled to contribute from that District sufficient funds to prevent the closing of the camp, which, at one time (from lack of fuel) seemed inevitable. I wish here to add my grateful acknowledgment of that timely assistance, and to say that one of the representatives of the Federation, Miss Mira L. Dock, is with us today. Her constant, effective assistance, her interest in the camp, has never ceased. Without it we would have fared hard.

So far as I am aware, no sufferer was ever allowed to leave camp for want of aid to keep him here. In 1907, on the request of the Forestry Department, the care of the infant sanatorium was transferred to the Department of Health. A new, larger career for it became possible. The then Commissioner of Health, the late Dr. Samuel Dixon, recognized at once the peculiar advantages of the situation and the vast importance of the work begun and possible here. I am not sure that any extensive plans relative to sanatoria similar to this, under state direction, had been earlier considered by him—but I do know that he promptly resolved to push the work on a larger scale. The country was then in the flush of the open-air treatment.

The policy of Dr. Dixon was abreast of our knowledge at the time. He and his able coadjutor, Dr. Johnson, built up a great institution here, the fame of which rendered the creation of the sanatoria at Cresson and Hamburg not only easy, but necessary.

This institution has safely passed through its period of probation and with new life, with a saner policy which has grown out of past experience, it starts upon its career under its new, distinguished chief, Colonel Martin, whose record yields abundant promise of larger usefulness in the era upon which the world seems about to enter. His keen vision of possibilities centers upon the young cases—many of those may be saved and may be re-created, and restored to perfect health.

It is a disgrace that the children of a vigorous ancestry should in this land of wealth, abundance and opportunity, have degenerated physically until they were only fifty per cent fit to defend the country in its hour of need. It is intolerable that such a condition be allowed to continue. There is but one help for it, namely, to make obedience to the laws of health a rule of life. This can only be brought about by training from childhood up. Our State Departments of Health and Education have this vision in full view and they never before were in such perfect co-ordination to realize this great desire.

May I make a brief personal statement? I would be a strange man, indeed, if I did not appreciate the honor the Chester County Medical Society and the State Department of Health have conferred upon me and upon my family name. I sincerely thank you, and gratefully accept it, with the reservation that I can claim no share in the results shown within the sanatorium enclosure, further than to have recognized the value and the promise of the location, and to have had, without warrant of law, enough courage of my convictions to invite Pennsylvania tubercular sufferers out on to their own land to get relief; and that I helped beg enough money to keep the camp alive during its three years of infancy, until the State adopted and cared for it.

As I look over the State charitable institutions, I can see that this one is especially fortunate. It is located on a great State forest reserve where, as the generations come and go, its inmates will breathe air filtered and purified by miles of living foliage, and drink water from the very fountain heads of streams, as these issue, uncontaminated, from the mountain heart.

# LANDSCAPE ARCHITECTURE IN OUR NATIONAL FORESTS AND PARKS

BY S. R. DeBOER

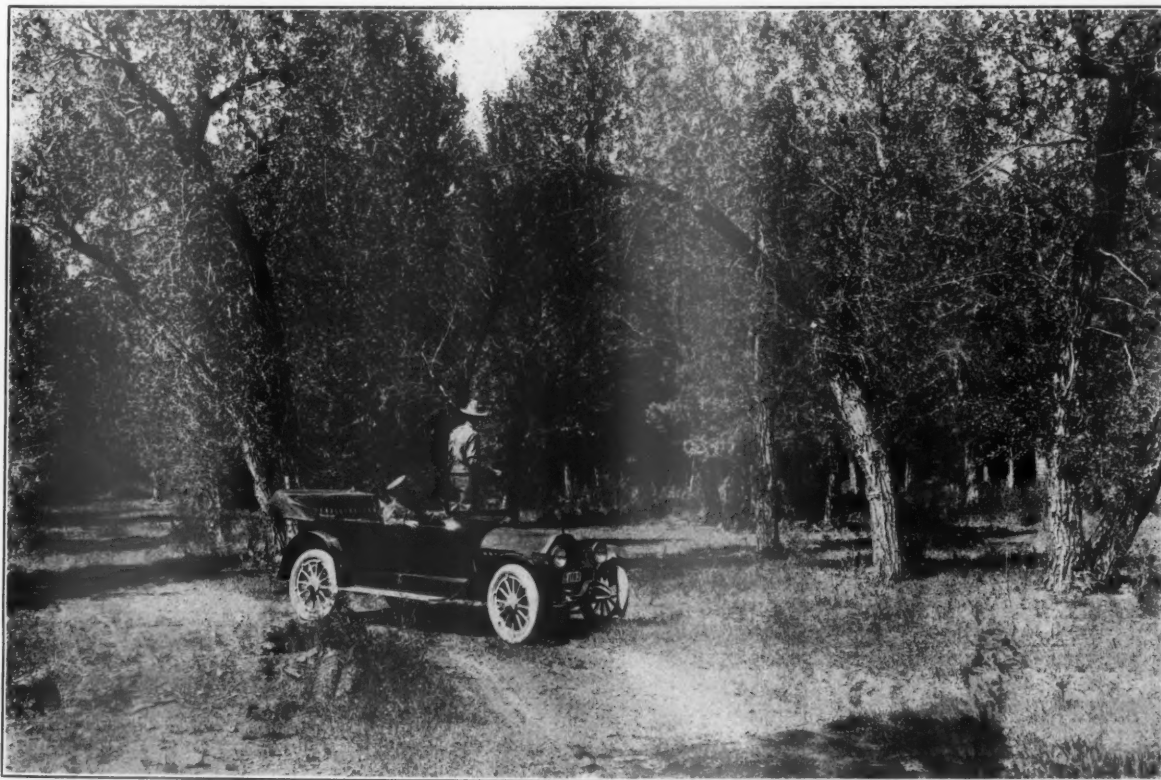
LANDSCAPE ARCHITECT FOR THE CITY OF DENVER

IT is only in recent years that organized effort towards better human development has reached the stage of recreation. Terrible crowding—overcrowding—in our large cities primarily led to the establishing of city parks. They were the necessary outcome of the tenement problems. Man has lived in nature and close to nature until only a few centuries ago. The call of the wild is not extinguished, only weakened in him. Too much crowding by buildings, with their smoke and soot, created a reaction, and he demanded open spaces where he could enjoy nature to a certain extent.

But there was no question of actual recreation involved in the beginning. Lawns were carefully guarded, flowerbeds and trees were for distant observation only. It gave some satisfaction but soon proved to be insufficient. For man, imprisoned in his city walls, lacked more than just the attraction of nature. In primitive life he had enjoyed the freedom of the wilds, his muscles had been in constant use. Now with his rapidly growing civilization, with machinery taking the place of muscular work, his whole physique had weakened and his brains had

grown beyond bounds. He needed more than just a park to look at, and especially did he need it for his children, who, growing up on asphalt streets and concrete sidewalks, missed the open meadows and the forests on the now building-covered farm. And so the park lawns became play meadows—under the trees play areas were set aside. Boating, swimming, skating and all athletic sports entered the once so carefully guarded quiet park scene.

We are in this stage now—the stage of recreation for those who want recreation. Or better, I should say, we are just leaving this stage and passing into the next stage of development. Man, under the pressure of his rapid evolution, in twenty years has outgrown this new idea, embodied in the city playgrounds. Like the original park ideas, it will have its place, will become even more valuable, but it also is insufficient. Leaders of thought have already pointed the way. Universal physical training must become the next step, compulsory physical training like universal mental training already is and has been for many years. And in this system of physical



LOCATING A CAMP

The Wapiti Camp Grounds on the Shoshone National Forest offer much attraction to the lover of the out-of-doors.



training the National Parks and Forests will likely play an important role. And here it is well for us to be thankful for having a government which in its park and forestry policy has already shown itself to be a leader, rather than one which reluctantly drags along the rear end of civilization's procession. To be sure, national parks were set aside as places in which the most beautiful scenes of the country are preserved for posterity, and only secondarily for recreative purposes.

But under the tremendous stimulant of the European war, we have begun to realize that we had not done everything there was in our power to do for those boys of ours who gallantly took up the challenge of autoc-racy and fought the victory of freedom. We have realized, and very late at that, how large were the numbers among these boys, who were physically unfit to join their comrades and had to be sent back to the homes they had left so enthusiastically. And there is the task we must set to work on now. We must cure these unfit, probably, but more than that we must stop raising the unfit.

Universal training — not for armies, not for killing, but for the higher development of man and woman, is already knocking at the door. In a very few years it will become an established fact.

These few remarks about the growth of our civilization were necessary, in order to better approach my subject. For though our national forests were set aside for economic reasons, be they for lumbering purposes, for water conservation or otherwise, and though the national parks were set aside for the conservation of scenic beauty, they both give the nation service in recreation. I do not want to belittle the work done in developing the economic

value of our forests. Inestimable is the value of the work carried on in this direction, value for the present as well as for the future generations, and still greater good will come from these reserves as the vital point of a nation's health and energy is given a place alongside the economic interests, and great progress in this direction is being made.

Theoretically there is a boundary between the national forests and the national parks. There is a difference of purpose, but to the visitor they are both alike. The national forests contain so many places of scenic beauty that to the visitor it is immaterial whether he is in a

national park or forest. He enters both with the same feeling of reverence and security created by the knowledge that these beautiful spots are protected through him and for him by his government.

There are places in the forests, valuable for economic purposes only. There are others valuable for recreative purposes more than for anything else. And there are large areas valuable for both alike.

Landscape architecture may not have any suggestions for the economic sections:

it does have a few ideas for the recreative areas.

For years the slogan has been in cases of mountain and other wild scenery "Leave nature alone." The landscape architect has been mistrusted in such places—a mistrust probably caused by the number of exotic designs which have been copied and transplanted into our country. There is a fear that if our mountain regions, with their native scenic beauty, are turned over to the landscape designer, he will fill the mountain tops with stone civic centers, with ornamental fountains and maple trees. And still this is an unfounded distrust. For the man, who through his training and artistic development



A COOK WHO TAKES HIS JOB COMFORTABLY

Domestic relations are reversed and it is father who is doing the housework in this little family scene. The picture is taken in the Municipal Camp, Denver Mountain Parks. Such tents may be rented from the city of Denver for \$2.50 a week.

## On the Trail

Not the least difficult thing in making the national forest's recreative values utilized is to get people actually into the forest. There is too much rushing through after the style of the auto fiend mentioned by Mr. DeBoer "grinding out the scenery." The photographs shown tell of two things. First, that the need for recreative development is recognized by the United States Forest Service and is being taken care of and, second, this is a step to aid that movement which is gaining greater momentum continually—that is, getting into the forests on foot or horseback so time may be had to enjoy the beauties of nature. These pictures were taken by Supervisor A. M. Cook and show sections of the Pikes Peak Bridle Path, a scenic trail to the top of Pike's Peak. This trail is distinctively a recreative trail, is laid out according to good engineering and landscape principles and fills a long felt want for an attractive and safe route for pedestrian and burro traffic to the top of



the peak. Many other projects along recreational lines are under way but these pictures will give a very good idea of what is now being done and what may be expected along the line of recreative trail work in our national forests.  
—A. H. Carhart.





ON THE UNCOMPAHGRE NATIONAL FOREST IN COLORADO  
Where the Bear Creek Trail winds like a silver thread around the face of the cliffs.

can create landscape beauty to harmonize in other places, should know enough to properly guide that work in natural surroundings. For development work goes on whether it is studied from an artistic point of view or not, and in places where this point of view might have some value there is no other professional whose line of study and experience fits him better to give advice.

To come back to the "Leave nature alone" idea. What does it mean? What does nature do if left alone? The strongest creatures, be they strong by mere brute strength or by better adapting themselves to their living conditions, the strongest creatures, either animal or plant, will survive and crowd out the others. The willow clump will spread over the open meadow and crowd out the birch, the alder, the honeysuckle and the dogwood. Aspens, beautiful though they are, will

quickly fill the fine meadow you had loved so well a few years ago. Cattle and sheep, for they are included in the "nature" of the slogan, eat and pull the wild flowers to a dangerous extent. Douglas fir and lodgepole pine will cover large areas to the exclusion of silver cedar, yellow pine and other picturesque trees. Mistletoe destroys the pine trees and in general weeds if left alone will soon become pests.

It is well to leave nature alone, as far as it goes. No doubt it is better to leave her alone than to destroy her. But a still better way, and much better at that, is to aid nature along. In places where beauty can be considered—and it seems with our recreation ideas that in places it should be considered—roads should be built—not from the standpoint of utility alone—but should be designed so as to show the best scenic points of the area. A road may lead around the head of a valley, and if there is a snowpeak visible over the length of this valley, nature may be improved occasionally by cutting down a few dozen trees to open up the view. Or the road may lead by a large cliff rock, which until now had been hidden by tall willow growth and could easily be partly cleared and made visible.

Or lookout points can be made accessible by narrow roads or trails. There are a hundred and one objects which may become objects of beauty in such a tract. Open yellow pine forests may become fine camping sites, dense aspen plantings may be made of great interest, some colony of rare plants may even be worth while to lead a road by them. A creek may be crossed at a picturesque bend, or on a large meadow the road kept to one side to prevent the open natural meadow from being cut into two small strips. Beautiful old trees may be



ON THE PIKE'S PEAK BRIDLE TRAIL

A type of trail that is being built by the Forest Service so as to make the forest more accessible to the large number of tourists who visit the mountains annually.



brought into better picture by removing all tree growth in the neighborhood.

There must be sections in the national forests which have little economic and great scenic value and such sections could be treated in this way. Especially near towns and cities or places of easy access from transportation points this treatment could be carried out. In a general way the national parks could be improved this way. Road lines should be laid out with due regard to engineering problems of course; poor grades and lines are inexcusable no matter how beautiful the scenery. After the roads are built a skeleton of the park is there, and the work of encouraging nature can begin. In places where wild flowers have been largely destroyed through

bines are already becoming scarce, and if you have seen the auto loads of these flowers taken from their shady nooks to be wilted away in some tourist's care, this will not surprise you. If our national parks are to fulfill their primary purpose of preservation, they must be saved from the danger of overcrowding, and this again can be best done by putting at the disposal of visitors other areas outside of the real gems we want to save.

I should like not to be misunderstood on this point. These parks should be for recreation and recreation of the masses. I would even willingly sacrifice the last flower, be it columbine or painter's brush, or Mariposa lily, if these flowers aided in adding interest to the life of some poor tenement child. But it is not these very



OBSERVATION POINT ON PIKE'S PEAK.

Looking down Ute Pass, in the Pike National Forest, from the automobile highway, a magnificent panorama spreads out before one.

natural processes or by tourists, they can be reintroduced by sowing their seed. In other places where the flower varieties are limited or crowded out by undesirable weeds the former can be encouraged by keeping down the weeds and plants which are not wanted.

To a certain extent these recreative areas in the national forests have an advantage over the national parks. For we must not forget that the recreational work is as much a sideline for the national park as it is for the forests, and that the parks were not created for the monetary benefit of hotels and transportation companies, but primarily to preserve their unique scenic beauty to posterity. There lies a danger in too great a popularity for these parks. In some parts of the Rockies wild colum-

needy we bring out by extensive advertising, and expensive hotels. They only attract the leisure class, the class which can enjoy nature everywhere on earth, who sit on hotel porches and have the scenery brought down to them at so much a dozen.

Easy transportation to our nature reserves for those who need them the most is the essential problem in this respect. Cheap transportation; auto roads, well built, are of immense value. But not even they reach the poorer class. And there again is the danger of the auto fiend, who grinds out the scenery at so many miles per hour. He can pass the same road a dozen times and never notice the little beauties you had anxiously preserved, but also never failing to grumble over the little



THE SKIING COURSE, GENESEE MOUNTAIN, DENVER MOUNTAIN PARK.

This exhilarating sport calls for much practice before perfection is attained and lots of fun is had by the amateur and at his expense.

hole you forgot to fill at some bridge approach. Main trunklines for autos are of the greatest importance, but I do think that great good could be done by building secondary roads with limited speed and trails for those who prefer a slower way of enjoying the views.

As a counterweight against expensive hotel rooms, auto camps have come into existence. Rather than be locked up in a hot stuffy room like the one he left in Kansas, the visitor of these camps will camp out in the open. And he shows much more appreciation for our scenery and, for this reason if for none other, should be encouraged.

This last fall, while roaming through the yellow and golden aspens, the green firs and pines, the red and purple scrub oak of our Pike National Forest, the thought occurred to me how many frail bits of young humanity, now starving for air and light and interest in life, could be grown up to sturdy citizens in the invigorating air of the Rockies. Instead of growing pale in the shadows of the metropolis, instead of being nerve shocked little victims of rapid transportation systems or weak-kneed, vice-ridden alley inhabitants, they could be

brawny, tawny, husky youngsters of the woods. Camps for children, camps for convalescents, camps for all people who want to enjoy the mountains and cannot afford the expensive hotels seem to me the logical followers of the auto camps. These camps should not be crowded together but scattered along lines of transportation which are cheap and able to handle large numbers of passengers. They should be within visiting distance perhaps of places of natural grandeur, but should not be close to them no more than any hotel, no matter how expensive it might be, should be allowed to create a false note into the well conserved beauty of the place.

To come back to my title, landscape architecture then can aid in those parts of the national forests and parks where aesthetic values are to be considered and where recreation can become part of the general policy. In addition to this it can be of service in applying town planning principles to laying out summer colonies, camping grounds and the like. And last, but not least, it can be of aid in preserving wild vegetation and in encouraging rare plants which, under civilization's foot, would soon disappear.

## FORESTERS EDITION

For the benefit of foresters and lumbermen, and also others desirous of technical and semi-technical articles on forestry, a Foresters Edition of AMERICAN FORESTRY will be published each month.

This edition will contain technical and semi-technical articles in place of the more popular articles on birds, shade trees, memorial trees, etc.

Members may have whichever edition they wish. The main edition will be sent as usual to those who do not notify the Editor that they wish the Foresters Edition.

# THE GOPHER TORTOISE OF FLORIDA

BY DR. R. W. SHUFELDT, F. A. O. U., ETC.

MEMBER BELGIAN ORDER ST. JOHN OF JERUSALEM

(PHOTOGRAPHS BY THE AUTHOR)

IN AN article in AMERICAN FORESTRY some time ago there was presented an illustration of a young Gopher tortoise from Florida, with a brief account of the specimen, which, by the way, had been collected by Mr. Nelson R. Wood, of the United States National Museum—at Auburndale. Then, too, in the account of the Gopher frog, a few more biographical notes on this remarkable reptile were presented; but no illustrations of it were given, and, as a matter of fact, the adult tortoise had, in life, never been seen by me. Subsequently, however, Mr. R. H. Young, of Haines City, Florida, sent me two full-grown specimens from his part of the State, and they came to hand in excellent condition. Both of them are now in the National "Zoo" at Washington; but I did not deposit them there until

ent kinds of them in the Old World. All belong in the genus *Testudo*, as do our three species—the Gopher Tortoise (*Testudo polyphenus*), and Agassiz's and Berlandier's Tortoises. Those Chelonians which are frequently designated as turtles are the Box and Semibox varieties, which are likewise terrestrial forms. A good example of these are the common Box turtles of the genus *Terpene* (formerly *Cistudo*); some half a dozen of them are known, and they have a very general distribution over the eastern sections of the United States—the Painted Box turtle (*T. ornata*) ranging as far westward as the Rocky Mountains and southward into northern Mexico.

Very often the large marine forms are spoken of as "turtles," particularly by those who are fond of turtle

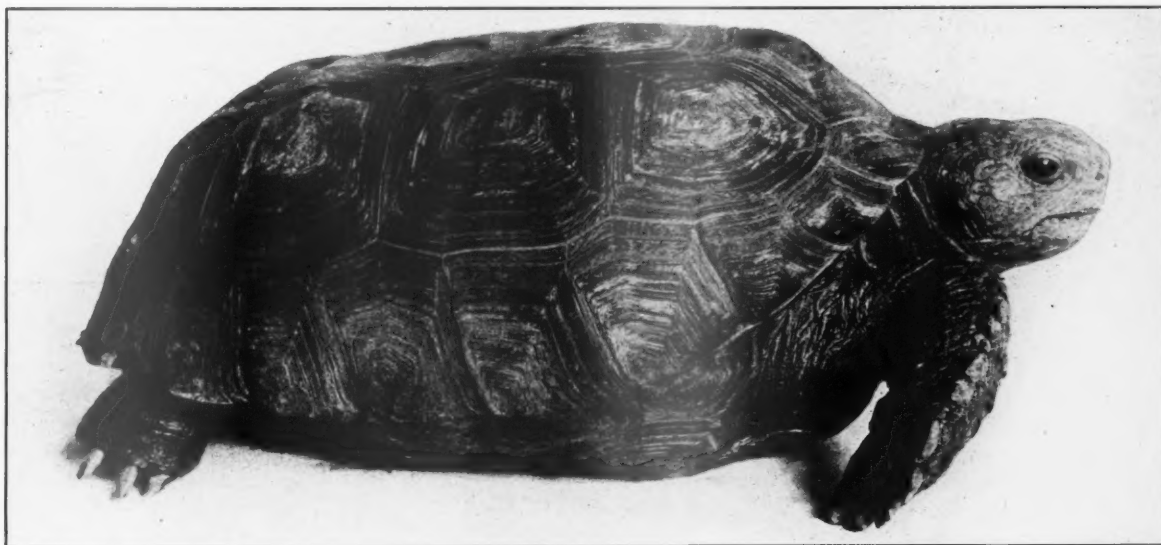


Fig 1. RIGHT LATERAL VIEW OF A LARGE GOPHER TORTOISE OF FLORIDA; ABOUT ONE-THIRD THE SIZE OF LIFE.

I had made a series of photographs of them in various attitudes. These pictures, several of which are of natural size, give all the external characters of the species; and they are, in so far as I am aware, quite unique in pictorial zoology.

Note that these specimens are spoken of as *tortoises* in contradistinction to all other names that have been applied, in the vernacular, to this group of more or less hard-shelled reptiles of the world's fauna. As an assemblage of animals, they have been designated as the *Chelonina*, and every variety of them is represented in North America. Strictly speaking, and for the moment ignoring the confusion that has been caused by their popular names, it may be said that a *tortoise* is a terrestrial representative of this group. While we have but few species of tortoises in this country, there are nearly forty differ-

soup. "Terrapins" are fresh and brackish water species, and several genera have been created to contain them. They have hard shells, and are frequently sought for food, especially the famous Diamond-Back (*Malacoclemmys palustris*).

Our soft-shelled species are also known as "turtles" (*Trionyx*) and of these four species have been described; they are interesting animals, both in nature and in captivity.

It will not be necessary to describe the external character of our Gopher tortoises of Florida, as most of them are well shown in the cuts illustrating this article. However, special attention is invited to the big, scaly plates, which are thick and horny, and which are to be seen on the anterior surfaces of the fore limbs. Now, when any one of these tortoises draws in its head as far as it



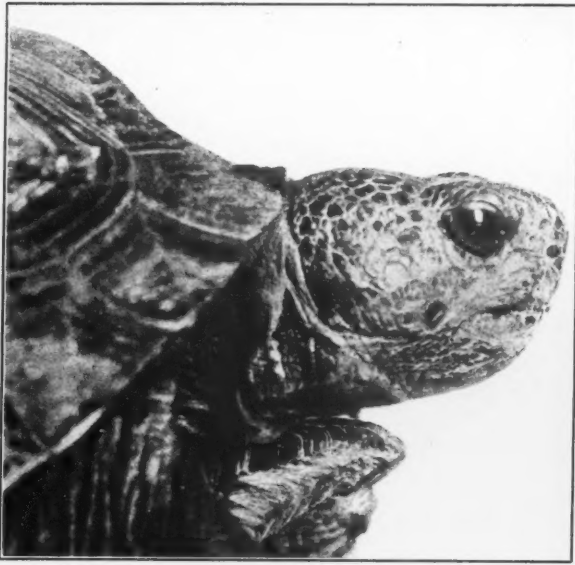


Fig. 2. SIDE VIEW OF THE HEAD AND FOREPARTS OF THE TORTOISE SHOWN IN FIGURE 1. APART FROM THE MOVEMENTS OF THE EYE AND THE LOWER JAW, ALL PARTS OF THIS FACE ARE IMMOVABLE; THERE CAN BE NO CHANGE OF EXPRESSION. NATURAL SIZE.

will go, it passes entirely out of sight. This habit is quickly followed by the reptile bringing its fore limbs in contact in front of its face and squeezing them close together. A powerful facial defense is thus created, made all the more effective through the presence of the heavy scalation referred to above. This peculiar defensive trick has not, to my knowledge, been illustrated before; nor is it, as a rule, described in popular books on reptiles. To those studying fossil turtles—and an army of them have been described—this habit should be of interest, for it has, in time, undoubtedly influenced the formation of the fore limbs. The hind limbs of one of these tortoises exhibit no such defensive armor, while all four feet possess large claws, usually made blunt by wear during locomotion.

A big Gopher tortoise may have a shell of more than

a foot in length in the median line, and an extreme width of 8 or 9 inches. Such a specimen, when in good condition, usually weighs between nine and ten pounds.

This tortoise is rather lacking in means of defense, the principal ones being the head protection, as described; its

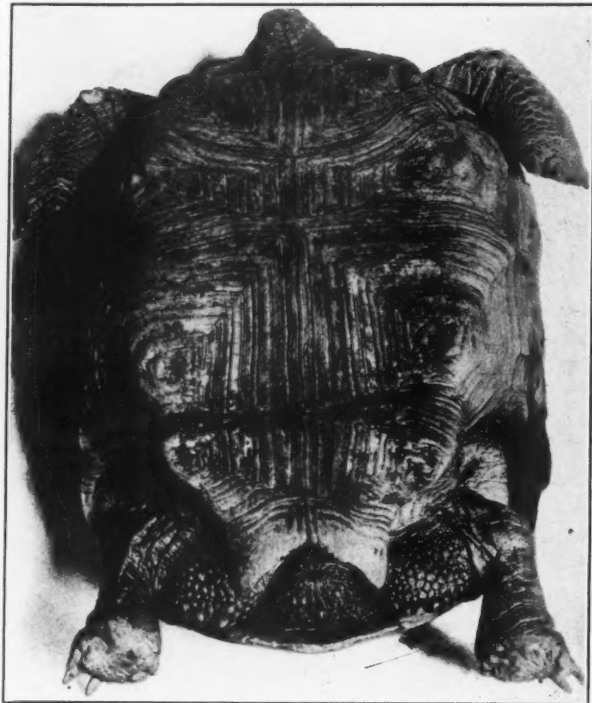


Fig. 3. UNDER VIEW OF THE TORTOISE SHOWN IN FIGURES 1 AND 2; MUCH REDUCED. THE TOPOGRAPHICAL CHARACTERS HERE DISPLAYED ARE WELL WORTHY OF STUDY.

coloration and thickish shell, and, finally, a retreat into its burrow. Taken in connection with these several points, the Gopher tortoise is fortunate in being a rather intelligent animal, and possessed, when fully grown, of great physical strength. It lives principally upon the succulent parts of certain low-growing plants and various



Fig. 4. FRONT VIEW OF THE GOPHER TORTOISE, WITH THE HEAD SOMEWHAT PROTRUDED.

small fruits of the same. Slowly plodding about in search of these, and crawling into its long burrow when it so desires, together make the major part of the uneventful existence of this practically helpless terrestrial chelonian. It is easily tamed, and will come to know those who feed and care for it. Some parts of the country in which they occur, the species is found to be quite numerous, and the best time to find them is during cloudy weather or the early hours of the morning. They are but very rarely found out of their burrows after the sun is well up and the temperature runs high. In some parts of South Carolina this tortoise is very abundant; and as the country referred to has very

much the character of a desert region, the animals are not in much danger of molestation from man. In such a place it is not difficult to find them; for, owing to the sandy nature of the soil, they are easily tracked. A typical

burrow may have a depth of some fifteen feet, sloping gently downwards to a moderately enlarged chamber at its blind end. Here may sometimes be found a curious species of the tumble-bug order, which has only been known to entomologists for a few years past.

Our Floridan Gopher tortoise has a near relative in

Berlandier's Tortoise (*T. berlandieri*), which occurs in suitable localities in north-eastern Mexico and in southern Texas. The apex of its upper jaw is hooked, whereas that part is *notched* in our other big land tortoises, and there are other superficial distinguishing characters.

Finally, there is a Desert Tortoise (*T. agassizii*), a species occur-

ring in the desert regions of the lower parts of California and deserts of Arizona; it has the general form and appearance of the other forms of the genus but from all accounts, possesses more intelligence.

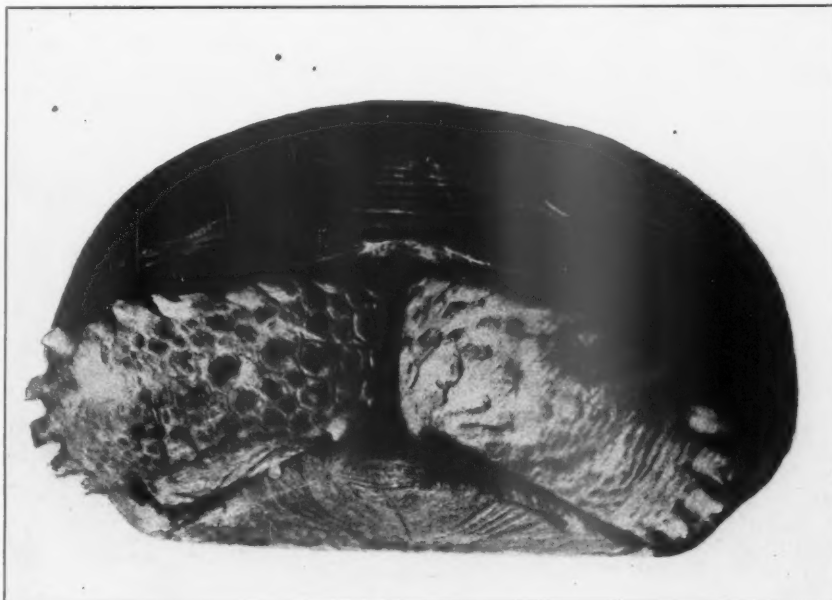


Fig. 5. SAME VIEW OF THE ANIMAL SHOWN IN FIGURE 4, WITH THE HEAD RETRACTED AND PROTECTED THROUGH THE CLOSE APPROXIMATION OF THE FORE LIMBS.

## THE SERVICE OF THE TREES

BY W. R. BENET

"Homes!" said the forest shagging the range,  
 "Lintel and floor, roof-beam and door,  
 Homes we build and deserts we change  
 To cities that smoke and roar.  
 Steel and stone may come to their own  
 But first we shaped and prepared for these.  
 We raise the world, who are overthrown.  
 We rise and toil!" said the trees.

"Ships!" said the forest tossing its plumes.  
 "The weltering tide we master and ride,  
 Oceans that smoke with hurricane dooms,  
 All ports of the world beside.  
 Iron and steel may set their seal  
 On hull and keel, with clanging boasts.  
 We have won a world to unveil and reveal  
 All continents and coast!"

"Beauty!" the forest in silver light  
 Breathed dim and strange through the sunset change,  
 Star-crowned, striding along the height  
 Lord of the lofty range.  
 "No stone takes lines of such vast designs—  
 No steel, such immortal mysteries!  
 From the birch by the lake to the mountain pines,  
 We dwell with God!" said the trees.

## FOR THEM A TREE IS PLANTED THERE

WITH the coming of the second Peace Christmas the movement for the planting of a permanent Christmas Tree has spread to many parts of the country. Communities are finding that the permanent Community Christmas Tree is a good investment rather than, as has been done, cutting down a beautiful tree for use only during holiday week. The tree becomes a rallying point for all community endeavor and discussion during the year. It keeps the spirit of Christmas before a town the year 'round, whereas, the custom of having a tree set upon the town square for a week savors of the

mark important dates in the school life. This phase of tree planting is spreading rapidly. First it was taken up as the means for honoring the students of an institution who had answered the call to war. One of the first trees dedicated was in honor of Lieutenant John W. Overton, of the Marines, who was killed at the Marne in July, 1918. This was done on the campus at Robertson Academy in Tennessee. Now schools are planting trees such as did Swarthmore to mark its semi-centennial the other day and as did the Woman's College at Newark, Delaware, to mark its fifth anniversary. Dean Winifred J. Robin-



*Courtesy Chicago Tribune.*

### DEDICATION BY THE "GOLD STAR" MOTHERS OF CHICAGO

With tear-filled eyes one hundred and fifty "Gold Star" mothers of Chicago dedicated a memorial tree in honor of their soldier sons. The tree was marked and is in the forks of the roads at Chicago Avenue entrance to the Cook County Forest Preserve near River Forest. Mrs. Oscar Vogl, the president of the Mothers' Association, dedicated the tree.

religion that is put on for Sunday only and laid aside during the week.

Memorial tree planting has gone to every corner of the country and its only limits are those made by the boundaries of our country. The tree, that symbol of ever returning life, has been adopted by thousands as the way to keep green the memory of those who offered their lives to their country. But it is not a memorial of this year or the next. It has become the memorial for every year in thousands of homes throughout the land. The planting of a tree, such an easy thing to do, yet meaning more than stone can tell or circled shaft emblazoned, has become the memorial of the people.

In tree planting schools and colleges have turned to

son, had the co-operation of the State Federation of Women's Clubs.

At Swarthmore the scenes marking Founders' Day on November 10, 1869, were reproduced on October 25. Alumni all the way from 1869 to 1918 were present. Two of the alumni present saw Lucretia Mott and her son, Thomas, plant two oak trees fifty years ago. They are, Isaac H. Clothier, the oldest member of the board of trustees, and Miss Susan J. Cunningham, the only surviving teacher of the first faculty. Governor Sproul, of Pennsylvania, who was a room-mate of A. Mitchell Palmer, the attorney general of the United States, at the school, planted a tree. Mr. Clothier planted another tree. Governor Sproul's tree was placed in position with those



## TWO QUEENS AND SOME TREES IN THE NEWS



(Left) Memphis, Tennessee, marks its centennial by planting a memorial tree which was dedicated by Miss Maude Renkert and now called the Maude Renkert Centenary Elm in honor of her selection as Queen during the celebration. (At top) C. M. Loring, "father of the park system in Minneapolis," who has set aside \$50,000 for the care of the trees to be planted along Memorial Drive. (Center) The Queen of the Belgians planting a European Green Beech from the Amawalk Nursery in Central Park. (Below) Birdman Eaton alights in a tree. S. C. Eaton, who helps carry the United States Mail from Washington to New York, discovered his engine was in trouble and the plane made a sudden drop into a tree near Philadelphia. When firemen got Eaton out of the tree unhurt, he looked around and made another discovery. He had come down within three blocks of his own home.

that had been planted by President Wilson, Governor Tener and Governor Brumbaugh. At the tree planting there were twenty-eight persons who attended the opening ceremonies in 1869. It is such plantings that give the greatest inspiration to others. Any class coming into or leaving a college can leave behind, through memorial tree planting, the finest memorials to that class.

One of the most interesting and beautifully worked out Memorial Tree Day programs was observed at Bloomsburg, Pennsylvania, where the State Normal School placed fifteen trees in honor of her heroes. Prof. D. S. Hartline worked out the plans.

An unusual turn, and at the same time a very pretty one, that memorial tree planting takes, is shown at Memphis in the planting of the Maude Renkert Centenary Elm. Miss Renkert had been selected as Queen for the Centennial Week celebrated by the city and the tree was planted to mark the event and named in honor of the young lady chosen for the honor.

One of the most unique tree dedications was the ceremony in connection with the marking of a tree in the forest preserve of Cook County, Illinois, by 150 Gold Star Mothers. Mrs. Oscar J. Vogl, the president of

the Gold Star Mothers Association read a telegram from Charles Lathrop Pack, president of the American Forestry Association. The shield placed on the tree reads: "Dedicated to the Heroes of Illinois, August 5, 1919."

The University Hill School of Boulder, Colorado, has dedicated a memorial tree in honor of four students who gave their lives to their country and to eighty-three other students who answered their country's call. In South Dakota memorial tree planting is well underway. The park board at Mitchell, under the direction of M. B. Kannowski, and the Dakota Wesleyan University taking the lead. A memorial grove is the way Mitchell has handled the planting.

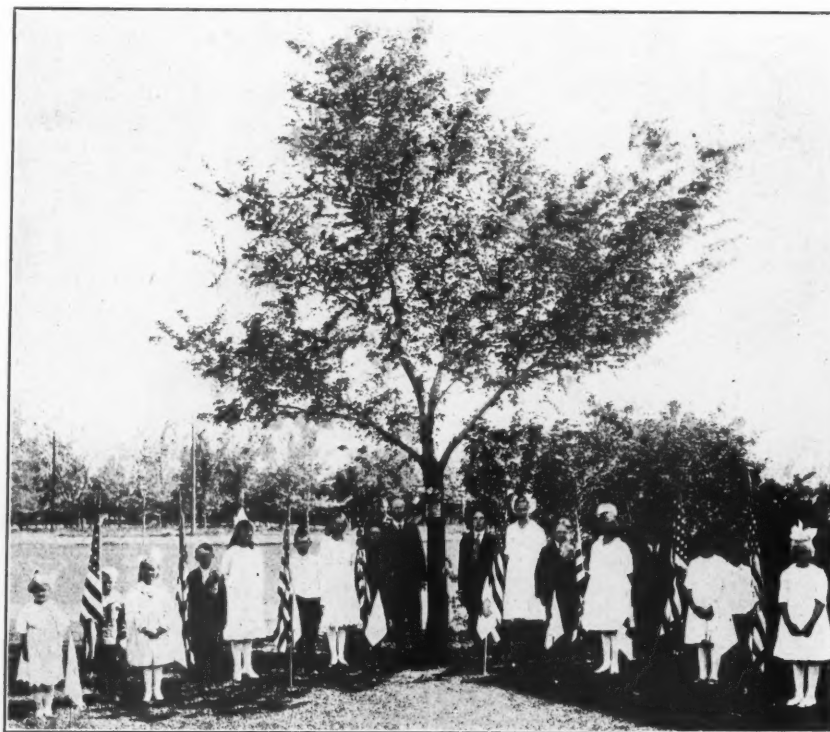
The first Home Unit of Base Hospital No. 10 to report memorial tree planting to the American Forestry Asso-

ciation is that of Philadelphia which planted six memorial trees on the grounds of Pennsylvania Hospital. Mrs. Arthur H. Gerhard arranged for the marking of the trees with the bronze marker designed by the American Forestry Association. At the ceremony Mrs. John T. Lewis, Jr., president board of managers of the Pennsylvania Hospital, presided. The following poem, by Lieutenant Cyril Winterbotham, who was killed in action, was read:

For you no medals such as others wear—  
A cross of bronze for those approved brave—  
To you is given, above a shallow grave,  
The Wooden Cross that marks you resting there.

Rest you content; more honorable far  
Than all the others is the Cross of Wood,  
The symbol of self-sacrifice that stood  
Bearing the God whose brethren you are.

Planting of memorial trees for Theodore Roosevelt, suggested by the Association at the time of his death, has been taken up throughout the country. But with the coming of the anniversary of his birth, tree planting in his honor was given new impetus. One of the first reported was the tree planted on the grounds of the Russell Sage Memorial Church at Far Rockaway, New York. Henry M. Toch, presi-



Photograph by Taugen.

#### TREE PLANTING BY UNIVERSITY HILL SCHOOL OF BOULDER, COLORADO

The University Hill School, of Boulder, Colorado, dedicates a Memorial Tree in memory of former students who gave their lives to their country and in honor of eighty-three others who offered their lives at their country's call.

dent of the Village Beautiful Association, planned the ceremony, and on the program were Rabbi Isaac Laudman, Ferdinand I. Haber, Rev. J. Milton Thompson, Maurice E. Connolly, William J. Morris and Richard E. Enright. A children's chorus sang the Star-Spangled Banner and America. To help mark Roosevelt Memorial Week, John Burroughs, the naturalist, planted a memorial tree for Colonel Roosevelt at Garden City, New York, on the grounds of Country Life Press, the corner stone for which Colonel Roosevelt laid in 1910. The tree is a sugar maple and Burroughs, after placing the tree, said that in twenty years he would get some fine sugar from it. The naturalist will be eighty-four years old next April.

In "Roads of Remembrance" there is a great appeal

and it has been taken up by women's clubs and motor organizations everywhere. The Memorial Tree Association at Chattanooga is planting more than one hundred trees for Hamilton County men. The plans are in charge of a committee made up of Miss Mollie E. C. Kavanaugh, Mrs. D. P. Montague, Mrs. E. Y. Chapin, Mrs. J. D. Lauderbach. The trees are to be planted in Montague Park. The McCracken County Historical Society of Paducah, Kentucky, will plant about two thousand memorial trees for every man and woman in the service. A Victory Road is to be lined with the trees, according to the plans being completed by Mrs. Clyde E. Purcell, the historian of the World War for McCracken County.

A booklet, issued by C. M. Loring, of Minneapolis, makes a plea for the planting of memorial trees along the highways of Minnesota. The booklet devotes much space to the work of the American Forestry Association

and urges every town in the state to get on the Association's honor roll. It is at Minneapolis that the big plans are being made to connect two parks with a memorial drive planted with the vase type of elm. The drive is to be seven miles long and from one hundred to three hundred and fifty feet wide. The booklet quotes Oliver

Wendell Holmes who wrote, "the finest poem I ever produced was the grove of trees I planted on a hillside."

In Indiana the women's clubs are working out plans to plant memorial trees along each mile of the Lincoln Highway in that state. Each mile is to be named for a famous son of Indiana and the trees planted in honor of the heroes of that county. The first mile is to be called the "Schuyler Colfax Mile," says the report to the Association, made by Mrs. L. S. Fickenscher, of the Women's Civic League of South Bend. At Mobile, Alabama, plans for a Memorial Highway, extending from that city to Chicksaw, five miles away, are nearing completion and the work is in charge of the City Federation, of which Mrs. H. T. Inge is president. Live oaks will be planted. Mrs. J. R. Hagan, of the Alabama Federation of Women's Clubs, took up the question of memorial tree planting at the state meeting at Huntsville. Plans for

beautifying an entire county are under way in Lake County, Florida. W. B. Powell, the secretary of the Lake County Park Commission, outlines to the Association plans whereby the "Roads of Remembrance" idea will be incorporated with the plans now under way. These plans provide for roadside tree planting and for the beautification of farm home yards as well. In Ware County, Georgia, eight miles of the Dixie Highway have been planted with trees. Mrs. J. L. Walker, the state historian of the Daughters of the American Revolution at Waycross, reports that forty memorial trees have just been planted along the southern division of the Dixie Highway and that in "Gilchrist Park," near Waycross, a thousand trees have been planted by General Albert Gilchrist, a former governor of Florida. The five city schools of Waycross have been organized into a "Tree Planting Association" by Mrs. Walker. Here is a suggestion for other organizations to take up and get

the school children interested in trees and then in forestry.

Julia Lester Dillon, chairman of the Conservation Department of the Tenth District (Georgia) of the General Federation of Women's Clubs has issued a state-wide call for memorial tree planting and instructed all members to write to the Association and register any



Champion Studio.

#### THE MEMORIAL AVENUE OF TREES AT BRIDGTON, NEW JERSEY

This is an indication of what towns and cities all over the country are reporting to the American Forestry Association as a result of its campaign for "Roads of Remembrance."

memorial trees planted. Pupils of the famous old Force School in Washington planted a memorial tree in memory of Quentin Roosevelt, who attended the school when he lived in the White House. The tree, a Lombardy poplar, was placed in the school yard on Armistice Day, 1919. Theodore Roosevelt, Jr., telegraphed the family's appreciation of thus honoring his brother. Every organization should get in line and help in this great movement which means that thousands of trees will be planted; that hundreds of memorial groves will be laid out; that miles of "Roads of Remembrance" will be beautified and above all that thousands of new voices will be lifted, through this campaign of education, on behalf of the need of a national forest policy. Are you a member of the country-wide chorus? If not, join. Take the lead in tree planting in your town for the great work to be done means a memorial that but few can vision at this time.



### Beaver Work

**W**ITHIN a ten-minutes' drive by automobile from the business center of Spokane, are unusually interesting evidences of the work of beavers. The Boy Scouts of Spokane have pounced upon this interesting bit of nature study and are eagerly studying the habits and work of the active beavers. The felled tree is about twelve inches in diameter. The picture in the center of the group shows one of fourteen beaver dams occurring within a few miles of the



course of Hangman Creek, which flows into the Spokane River, and the third picture shows three cottonwood trees, averaging eighteen inches in diameter on which the industrious little fellows have been at work only one night. It is estimated that the cutting would be complete and the trees felled in four nights. Hundreds of such trees, generally cottonwoods, are being felled in this way along the course of Hangman Creek.

(Photographs by courtesy of  
Frank W. Guilbert.)







# Forestry for Boys and Girls

by E C Cheyney

## THE PINE WOODS FOLK

### SQUEAKY SEES A NEW ENEMY



SQUEAKY CHIPMUNK sat very still on the old log over his doorway and watched a kingbird catching moths and beetles. The sharp eyed little bird seemed to see them all, no matter how small they were. He sat on the dead limb of a birch, turning his head sharply from side to side. The instant an insect came near he made one quick dive, gave one vicious snap of his bill and returned to the same perch. He never missed.

"My," thought Squeaky," but he catches a lot of them. There is somebody who works for the trees after all. If he stopped eating bugs, the bugs would eat up the woods and everything else."

Just then the kingbird rushed at the top of a balsam tree near by and his bill snapped furiously. Around he came and dived at the balsam again.

"Could he have missed that one?" Squeaky thought, and then he had the surprise of his life. Chatter Box, the red squirrel, peeped out of the bottom of the balsam, and ducked just in time to escape another rush. Yes, the kingbird was actually diving at Chatter Box and Chatter Box was doing his very best dodging. Squeaky did not think that Chatter Box was afraid of anything. He had seen him chase a grey squirrel three times his size, but he certainly seemed to be afraid of that little bird. Something took the kingbird away and Chatter Box slid very quietly down out of the balsam and jumped across to a Norway pine.

"What is the matter with you and the kingbird?" Squeaky called.

"I ate some of her old eggs two years ago," Chatter Box explained rather crossly, "and she's been picking on me ever since."

"You ought not to eat eggs," said Squeaky. "The birds catch the bugs and keep them from eating up the trees and all the crops."

"I guess the trees will live as long as I want them," said Chatter Box selfishly. "And as long as I can climb I'll eat birdeggs; they are certainly good."

"Well, you surely can climb," said Squeaky

enviously. "I watched you come down that balsam."

"Climb!" Chatter Box bragged. "I guess there is no one that can catch me up a tree. Not even that old kingbird."

He looked very proud of himself and was so puffed up that he did not see a reddish brown form glide silently from behind the birch to the base of the Norway. It was a long, lithe form something like a weasel but larger. It moved so swiftly and silently that Squeaky, who was looking up at Chatter Box, did not see it either. But at the first click of the cruel claws on the bark of the Norway Chatter Box's pride vanished. With one wild scream of terror he tore up the tree, circling as he went. He climbed very fast, but the red shadow moved faster and kept right under him no matter how he dodged around.

He knew it was no use. He was getting near the top of the tree and there was no place to go. He ought to have jumped to another tree, but it was too late now. Too late for anything. He was so badly scared that he could not see what he was doing. He ran out onto the end of a limb and jumped blindly out into the air. The shadow let go of the tree and dropped with him. They both hit the ground at the same time, but Chatter Box had flung himself so far out from the limb that they were quite a ways apart. He was stunned by the fall and all mixed up from spinning around in the air. He felt sick and did not know what had happened, but fortunately he had landed close beside a rotten log in the end of which there was a hole. He only knew that when he was sick he wanted to hide and he crawled feebly into the little hole.

He was just in time. The end of his bushy tail was scarcely out of reach when the red shadow pounded furiously against the end of the log.

Squeaky had watched the chase in amazement. Here was someone who could outclimb Chatter Box in spite of his bragging. He had never seen anything move like the strange creature. He became so interested that he

forgot all about himself and ran clear over to the end of the log to see what would happen. When he saw Chatter Box was safe, he gave a squeak of excitement. The shadow turned at the sound and gave a look.

That one look was enough for Squeaky without waiting to see any more. He tore headlong back to his hole and was so badly frightened that he did not dare come out again for three days.

#### BERRY-LIKE CONES.

You all have seen a pine cone and you all know what is meant by coniferous, or cone-bearing trees. They are sometimes called softwoods and sometimes evergreens. They all have leaves in the form of needles, like the pine and spruce tree, or little scales like the arborvitae or the red cedar. They never have broad leaves like the maples and oaks. They make up a very large proportion of our forests and supply most of our construction lumber.

But did you ever hunt for the cones of a red cedar, or juniper? Instead of the cone-like fruit that you would expect, there is a small purple berry about the size of a pea. It looks more like a huckleberry than it does like a cone. And yet, because it is formed in the same way as a cone, the tree has been classified as a conifer.

The yew-tree is another with a very peculiar cone. The tree itself looks something like a balsam and very clearly belongs to the same

class; but the fruit is a surprise. In the place of the familiar cone there is a small brilliant red cup closely containing a little red ball. This also was formed like a cone, but has been developed into this peculiar, berry-like fruit.

#### THE LEAVES OF SPROUTS.

You have probably noticed that when an oak, or a basswood, or a cottonwood, or some of the other hardwoods are cut down a number of shoots or sprouts grow up from the stumps. The large tree which was cut down, possibly sixty or eighty feet high and two or three feet in diameter, had developed a very extensive root system to support such a large tree and supply it with the necessary food. Such a tree has thousands of leaves and the roots must supply them all with water and mineral food. When the tree is cut down the root system is not disturbed, but instead of the big tree it has to supply only the little shoots that come up from the stump. The result is that these sprouts, furnished with such an abundant supply of food, grow very rapidly for the first few years, and especially in the first year, produce some very large leaves. Most of the leaves on the young sprouts are larger than those on the seedling trees and occasionally there are some enormous ones. A cottonwood sprout will sometimes produce leaves almost as large as dinner plates.

Such abnormal leaves are curious and worth watching out for.

## PLANT A BEECH

BY LOLLIE BELLE WYLIE

Plant a beech tree when I die,  
With its arms held to the sky  
Plant it firm and plant it deep,  
Somewhere, when I fall asleep.

Should a bird for Love's dear sake,  
In the boughs a warm nest make,  
Or a squirrel, blythe and gay,  
Through the silvered branches stray,

I am sure that grateful tree,  
Welcome words will give from me,  
For a beech tree, gnarled and strong,  
Echoes my home-loving song.

Plant a beech tree when I go  
Into God's White Fields of Snow,  
Plant it where the red bird calls,  
Where the sunshine softly falls.

Plant a beech tree kissed by sun,  
When my sands of Life have run,  
And my soul, if souls are free,  
Hovering, will find that tree.

Plant it where the fireflies,  
Bees, and men with tired eyes,  
Turn to rest on living green,  
Finding hope and light serene.

When I rest, I know I'll know  
If my beech tree branches grow,  
If they make a home for Love,  
Arched by starry skies above,

Or if birds go there to sing,  
Or the bees on golden wing,  
Or a squirrel seeks its shade,  
Sheltered, safe and unafraid.

# THE BAGWORM OR BASKET-WORM

BY FRED J. SEAVER

ONE of the biting insects which is responsible for a great deal of damage to trees and shrubs both in parks and in private grounds is the bagworm or basket-worm, says the *Journal of the New York Botanical Garden*. The characteristic habits of the insect have given to it the very suggestive name which it bears. During the process of feeding the worm spins about itself a bag or basket which is carried about with it during the entire feeding stage. The bag is composed of silk together with bits of leaves or minute twigs from the plant on which the insects happen to be feeding. These are woven together in such a way as to obscure the caterpillar within and present a very ragged and unkempt appearance. Whether the bits of leaves and other debris are used to strengthen the bag or are employed as a deceptive device to render the insect less conspicuous is a question which the reader is at liberty to answer for himself.

While feeding, the head of the worm can be seen protruding from the mouth of the bag, which is carried by the caterpillar while it clings to the plant with its three pairs of strong legs. When disturbed or while at rest the bag is suspended from a twig by a mass of silk threads which are wound about the twig like a sheath, the caterpillar then being entirely concealed within.

Unlike many of our troublesome insect pests, the bagworm is undoubtedly a native of this country, being found in the eastern half of the United States as far north as Massachusetts and as far south as Texas, but is less evident or absent in the other Gulf states. In many of the states this insect causes a great amount

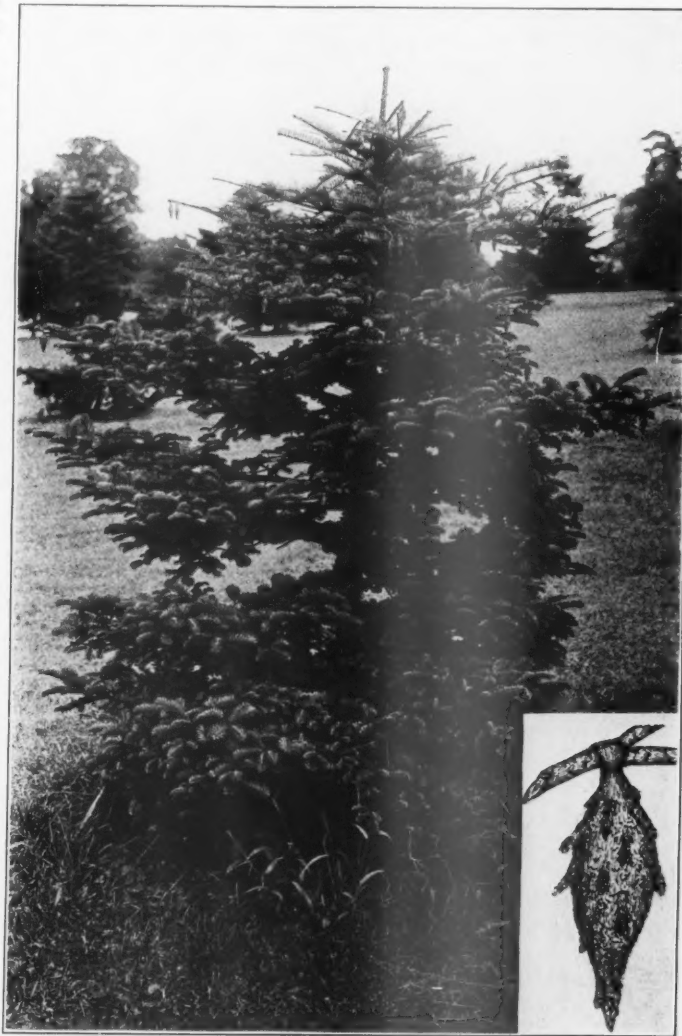
of damage. The bagworm is almost an omnivorous feeder, attacking all kinds of deciduous trees and shrubs, and also seems to be very fond of conifers of various kinds. The caterpillars seem to be entirely oblivious of either taste or smell, attacking trees whose foliage would naturally seem to be repulsive, such trees as the sassafras having been found on our grounds almost entirely defoliated by them.

While also especially fond of evergreens they show some preference for the arborvitae. Where the insect gains the upper hand before being detected these trees may be almost entirely defoliated by them in a short time. They do not as a rule feed on herbaceous plants, although they have been known to do so in the absence of other suitable foods. While at times they seem to be rather selective in their habits, they nevertheless appear to be able to adapt themselves readily to almost any kind of green plant-food.

The eggs of the female are deposited in the bag, which is suspended to a twig where it remains over winter. Late in the spring the caterpillars hatch, leave the old nest, and attack the nearest leaf. There they begin to feed and to construct a bag of silk and debris. While the larva is small the case is carried upright,

but as it becomes larger it is allowed to hang down. The caterpillar molts four times before it reaches maturity. During the process of molting the bag is attached to a twig by means of silk fastening. At the bottom of the bag is a small opening through which the old skin and excrement are pushed out of the nest.

Toward midsummer the caterpillar attaches the bag to a twig and lines it with another layer of silk and the



Courtesy the New York Botanical Garden  
THE BAGWORM OR BASKET-WORM.



bag now becomes its cocoon. The pupal stage lasts about three weeks, at the end of which time the adult appears. The male works its way through the bottom of the bag and the winged adult moth makes its escape.

The female moth is wingless and legless and never leaves the cocoon, but merely emerges far enough to permit mating. She then deposits her eggs in the bag and in a short time emerges a second time from the cocoon, dies, and falls to the ground. The eggs remain in the bag until time to hatch the following spring.

Since the eggs are deposited in the bags and remain there during the winter, one of the best means of controlling the insect is to collect and burn the female bags before time for the young caterpillars to emerge in the spring. This is not a difficult matter, especially on de-

ciduous trees, since the bags are very conspicuous in the winter after the leaves have fallen. When we take into consideration the fact that for each female bag burned a large number of eggs have been destroyed which would otherwise have developed into active caterpillars in the spring, we can appreciate the value of this means of control. Hand picking in the summer time is also quite effective and practical especially on small evergreens and shrubs. Even on large trees a great deal can be accomplished along this line by the use of a long-handled pruning hook.

If the hand picking has been neglected or the insects are too numerous to be handled by this means, the caterpillar, being a leaf-feeder, can be checked by the use of a stomach poison sprayed or dusted on in the usual manner.

## ODDITIES IN TREE STEMS

BY ELIZA F. ANDREWS

**W**E ARE all of us accustomed to look upon the stems of trees as the most rigid and stable of vegetable growths—the solid framework, which, like the bony skeleton of animals gives shape and coherence to the entire body. While this view is in a general sense correct, a careful observer of the surprising mutability which these solid structures display in adapting

themselves to their situation, might sometimes feel inclined to regard them as the most yielding and tractable parts of the plant.

No account is taken here of the transformations to which stems, in common with other plant structures, are liable when called upon to perform other than their normal functions, as when aerial branches are changed into



NATURE IN UNNATURAL FORMS

Fig. 1. A thickly wooded hill slope bordering on the Coosa River bottom near Rome, Georgia. In the foreground is a young hackberry supporting the stems of a cockspur thorn, and two trumpet vines, only one of which is seen in the picture.

Fig. 2. Two contiguous dogwood stems which have nearly completed one turn around each other during their growth from root to first branch of the crown, a distance of about 3 meters—thirteen feet.

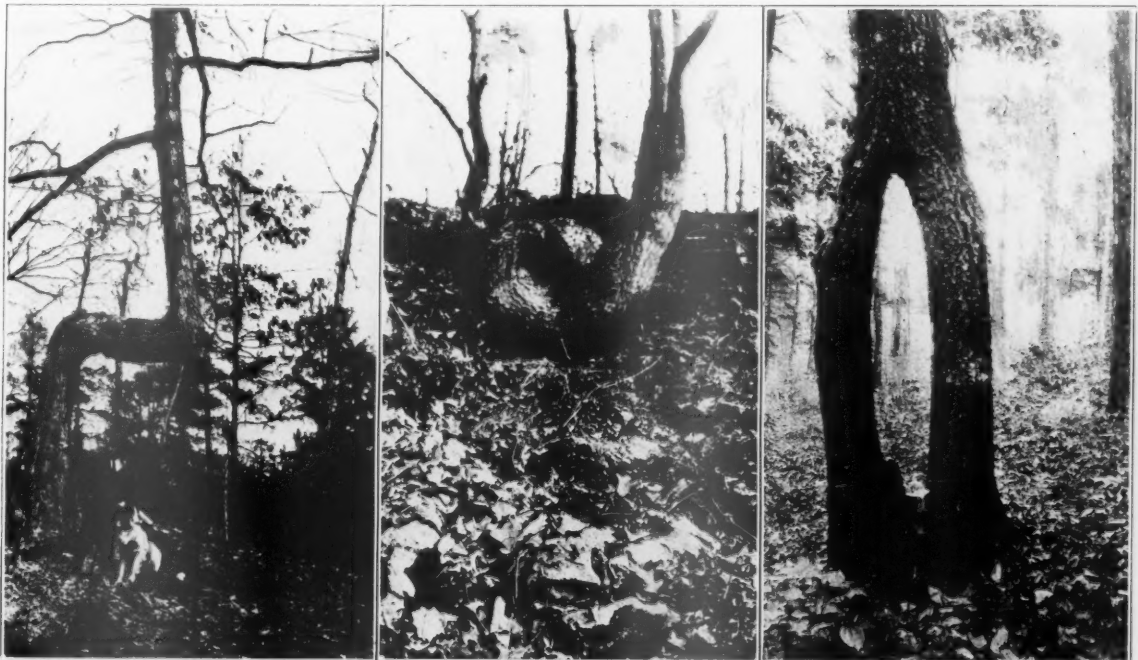
Fig. 3. A young blackjack oak on an exposed mountain slope in North Georgia, which has repaired the loss of 2/3 of its main stem by sending up a vigorous shoot from the base of the injured part.

protective thorns or underground stems into rootstocks and tubers for the storage of food. Evolutionary changes of this kind, which are connected with the development of the species, have no bearing upon the subject of this paper, which is concerned only with the method adopted by individual plants in overcoming the difficulties of unfavorable conditions.

It is in mountainous and hilly sections and along the banks of streams subject to overflow, where vegetation is subject to many vicissitudes from wind and sleet and washing rains, that examples of these efforts of the stem to readjust itself are most frequently met with. In densely wooded areas, where the chief problem is to gain access to light, there is greater uniformity of growth. As the most available source of light in such over-populated plant communities is from above, there is a general tendency for stems of all kinds to increase in height out of all proportion to their thickness, and many of them would not be able to sustain themselves against the first

live and six inches, respectively, could not possibly support its weight without the prop furnished by the hackberry. The position of the haw stems is somewhat obscured in the photograph by a young elm shoot which has intruded itself between them and engaged in a contest with the smaller of the haw stems for "a place in the sun." Two trumpet vines have also joined in the contest, but the haw, though a mere amateur at climbing, has won the race, and so completely enveloped the crown of the hackberry that when first seen from a distance in spring it might easily be taken for a "big tree haw" (*C. viridis*) in full bloom.

In this connection it may be noted that when the stems of two trees grow up in very close contact they show a strong tendency to twist around one another, like the elm and haw stems in Figure 1, and the dogwoods in Figure 2. This is probably due to the same cause which is supposed to induce the twining of vines—a more rapid growth on the free or outer side. In rigid tree



SOME FREAKS OF NATURE IN TWISTED STEMS OF TREES

Fig. 4. An oak in an open wood on Lookout Mountain, that was bent by sleet at an early stage of growth and has righted itself by developing a side branch from the part above the break to continue the main axis.

Fig. 5. Curiously coiled stem of an ailanthus growing on a tall bluff near Dayton, Tennessee. The stem being prostrated by a storm, while the root held fast to the soil, was able to right itself by making the snail-like coil seen in the photograph.

Fig. 6. An inverted fork formed by the union of two young red oaks originating from root sprouts on opposite sides of a dead stub, the two roots eventually coalescing into a vigorous main stem, and the dead stub dropping away.

storm of winter without the presence and support of their companions.

An extreme case of this kind is illustrated by the stems of a cock-spur thorn, in Figure 1. Though one of the stiffest and most intractable of the stiff-necked haw family, this individual specimen in its search for light, has taken on the climbing habit and forced its way to the top of the young hackberry in the foreground of the picture—a tree some 25-30 feet in height. Here it has expanded into a crown of such disproportionate size that the two slender stems, with a girth of only about

stems, however, the twining movement is so slow and the coil so long drawn out by the more rapid upward growth, that it may require many years to make a full turn. In fact, few tree stems ever complete a round. This has nearly been accomplished by the dogwood stems in Figure 2, at the height of about 12 feet, while a pair of twin maples in the same wood, about 8 inches in diameter, and from 50 to 60 feet high, have made only a half turn in more than double the distance.

The life history of trees is chronicled largely on their stems. The young blackjack in Figure 3, growing on a

wind-beaten mountain slope in North Georgia, bears manifest evidence of its stormy career in a fracture which has laid low fully two-thirds of its growing axis. The usual way of repairing such injuries is for a side branch, or a shoot from a side branch, to develop into a leader and take the place of the fallen axis, but the accident will always be recorded in a sharp bend or angle at the point where the new leader started, as in Figure 4. In the case of our blackjack there was no branch below the injured part from which a new axis could develop, but as the fibres were not all broken, being for the most part only wrenched and twisted, sufficient nourishment was conveyed through them from the roots to feed the lowest shoot of the broken axis so that it was able not only to develop into a vigorous new leader, but to perform a rather unusual feat in doing so. Its position on the main stem happened to be such that after the fracture occurred it was brought on the under side, and in order to remedy this unfavorable situation, it had to make a turn of three-fourths of a circumference around the prostrate axis in order to regain its upright position. Curiously enough, this change of direction brought the lowest sprout of the new leader into the same inverted position that the former had occupied before its remarkable evolution. But for some reason the second shoot was unable to make the necessary readjustment, and though it attained a girth of about 6 inches and developed several branches, in this inverted position, it finally died without being able to right itself. The part of the fallen axis above the new leader also gradually died and rotted away, as usually happens in cases of this kind. The decay begins at the apex and proceeds towards the base, where the successful competitor, occupying a position of advantage, appropriates to itself an ever increasing share of the nourishment brought up from the roots, while its weaker brethren perish one by one from starvation.

An even more striking case of this kind of adaptability is that of the *ailanthus* stem on one of the steep flanking ridges of the Walden plateau, near Dayton, Tennessee, shown in Figure 5. There was quite a thicket of these "weed trees" (as their aggressive, weed-like habits fit them to be called), covering the side of the ridge, and

the fantastic forms they assumed in adjusting themselves to the difficulties of their position would fill a picture book. This "shiftiness" of the stem in circumventing disaster is probably an important factor in the success with which the species is asserting itself. With its winged samaras blown about by every breeze, and its prolific crops of shoots from stumps and underground stems, it threatens to become, in some localities, a dangerous competitor with the native trees and shrubs.

A very different case from those described above, and a very unusual one, is the inverted fork at the base of the red oak shown in Figure 6. The opening between the two prongs is not the result of decay, but is merely the space between two perfectly healthy stems originating as root sprouts on opposite sides of the stub of a small tree which must have been killed when not more than 6 or 7 inches in diameter, to judge from the size of the socket left by it at the bottom of the opening. The

growing shoots were held apart by the stub until it rotted away, after which they coalesced into a single composite stem that now towers up to a level with the tallest of its neighbors. The two individual components measure 24 and 32 inches in girth, respectively, and the composite, at a height of 16 inches above the point of union has a girth of 39 inches.

This brings us to the very interesting subject of twin and composite stems, but it is too wide a field to be explored here, and would require a paper in itself.

Sometimes, when a whole tree is overthrown in such a way that the roots continue to maintain their connection with the soil, a crop of new shoots, fed by sap from the parent stem,

springs from the upper side in a straight row, like the teeth of a comb. Figure 7 is the photograph of a prostrate haw with a flourishing progeny of shoots from the basal portion of the stem, and even the branches that formed the crown have partially succeeded in erecting themselves. The stem had evidently been in its present position for several years and bore a well developed crop of shoots, when I first saw it, seven years before taking the photograph. It is still functioning actively, though some of the older shoots are beginning to crowd out their younger brothers, and will eventually starve out the rest of the clan, unless they should, in the meantime, strike root in the earth and begin an independent existence.



A PROSTRATE HAW

Fig. 7. The stem of a haw which was prostrated and partially uprooted by a storm. From the upper side of the basal portion a number of upright arborescent shoots have developed, and the branches that formed the crown have lifted themselves into a more or less vertical position.



# DESTROYING FEMALE TREES

BY ALDO LEOPOLD

SECRETARY CHAMBER OF COMMERCE, ALBUQUERQUE, NEW MEXICO

**A**FTER nearly twenty-five years of argument and discussion about the abatement of the cotton nuisance, the City Commission of Albuquerque, New Mexico, has ordered the cutting down of all female or cotton-bearing cottonwood trees within the city limits.

A large proportion of the shade trees of many western cities are cottonwoods. The individual trees are of two sexes and the female trees bear annually a most prolific crop of cotton, which acts as a mechanical irritant to

Several remedies for the cotton nuisance were tried in Albuquerque but it was finally decided to do away with the female trees. Two years ago, Dr. W. H. Long, Plant Pathologist for the U. S. Bureau of Agriculture, discovered that a weak solution of sulphuric acid applied to the trees at the time of flowering effectually sterilized the blossoms. Dr. Long secured the use of a horse drawn tank sprayer and succeeded in spraying the trees on a wholesale scale at a very moderate cost. It was



AVENUE OF OLD COTTONWOODS ON COPPER AVENUE, ALBUQUERQUE, NEW MEXICO. THE FEMALE TREES ARE TO BE REMOVED AND REPLACED BY NON-COTTON BEARING TREES.

sufferers from hay fever, and which during the months of June and July litters the streets, screen doors, and plastering with unsightly masses of soiled cotton.

The question of whether the female cottonwood tree is principally a public nuisance or principally a valuable shade tree is one which is discussed annually and with great vehemence in many western towns, and in the city of Albuquerque the question of whether or not to remove the female trees has been under discussion for the last decade. Albuquerque is one of the best shaded cities in the west, the city limits embracing approximately 1,000 magnificent cottonwoods planted from twenty to seventy-five years ago by the early settlers who first brought the Rio Grande Valley under irrigation.

found, however, that the spray method had two serious objections: First, the blossoms had to be sprayed in just the right stage and the blossoming period was too short to cover the whole city with one outfit. Second, it was impossible to spray the trees without spilling some of the spray on the shrubbery, automobiles, porch rugs, etc. The varnish on automobiles was disfigured and some shrubbery was more or less injured by the acid solution. Accordingly the spraying method was abandoned.

Relief was also sought by pruning. It was found that by lopping the tips of the female trees the new growth did not bear cotton until its third year, and accordingly pruning or "pollarding" was found to be an effective temporary remedy. It was found impractic-

cable, however, to persuade all owners of private property to keep their trees pruned down.

Several old timers also claimed that by boring a hole in the trunk of the female tree and filling the hole with flowers of sulphur that the blossoms would then be effectively sterilized. This method was never tried out by scientific observers but the U. S. Forest Service is initiating an experiment this year to determine whether it is effective.

Many citizens seriously objected to the removal of the female trees because they feared that the town would either be denuded of shade or else other species would be used to replace the cottonwoods removed, and they objected to this because of the feeling that cottonwood trees were at once the most practicable and in best taste for meeting southwestern conditions. Last year, however, the Albuquerque Chamber of Commerce discovered a reliable source of supply of guaranteed male nursery stock and when this became known most of the objectors

gradually changed their attitude and public sentiment became such as to allow of the removal of the female trees and their replacement by male cottonwoods.

The City Commission has adopted a ten-year program for the removal of the cotton-bearing trees and has prepared a map showing the location of each cotton-bearing tree in the city. Ten per cent of the total are to be removed each year and property owners are held responsible for proper pruning or otherwise preventing the occurrence of cotton on the remaining trees in the meanwhile. Trees to be removed each year will be designated by the City Manager and the property owners will be responsible for their removal. It is not probable, however, that property owners will be put to heavy expense because the fuelwood obtained will in most cases offset the cost of removal. The City Commission will also require that the trees removed be replaced by young trees as rapidly as possible, young male cottonwoods being preferred.



### HARNESSING A RIVER

BY GUY E. MITCHELL

**F**RANCE has for years regulated the flow of her streams to prevent erosion and damage to the adjacent lands in a manner almost as refined as we handle the water supply of a city here in the United States. The photograph shows the construction of walls on the sides and across the bottom of a small stream near Modenne, France, to prevent the washing of the land, and cutting out of the stream bed. In years back before this control work was done this stream rushed down out of the mountain gorge, cutting its banks after very heavy rainfall, filling up the channel below with the sand and soil washed down and ruining the vineyards and orchards. Now the stream is kept in bounds in the straight channel and controlled as completely as the water in a canal.



### THE BURGOYNE ELM

A FEW RODS NORTH OF THE FOOT OF BURGOYNE STREET, ON THE EAST SIDE OF BROADWAY, SARATOGA, NEW YORK, BETWEEN A BLACKSMITH SHOP AND A BRICK STORE, STOOD AN OLD ELM TREE UNDER WHICH, TRADITION SAYS, THE SURRENDER OF GENERAL BURGOYNE TOOK PLACE. THE TABLET WHICH HUNG ON THE OLD ELM IS NOW ATTACHED TO THE BRICK WALL OF THE STORE BUILDING. THIS ILLUSTRATION IS MADE FROM A COPY OF A PHOTOGRAPH OF THIS TREE, THE ONLY ONE KNOWN TO BE IN EXISTENCE, AS THE NEGATIVES OF THIS TREE WERE DESTROYED BY A FIRE SOME YEARS AGO. THE TREE WAS ALSO DESTROYED MANY YEARS AGO.

## AN INTERESTING SPIDER FROM FLORIDA

BY DR. R. W. SHUFELDT

**A**BOUT a year ago, Mr. R. H. Young, of Haines City, Florida, sent me alive the two curious little spiders here shown in the figure. Shortly after their reception they were photographed as represented, being of natural size and in the attitudes they commonly assume. In form, it will be noted, they are remarkably characteristic, while their white bodies, black spines, and red markings, render them so conspicuous, that of all our small spiders this species is probably the most easily identified.

We find this form arrayed in the Super-family *Argiopoidea* as the subfamily *Gasteracanthinae*, or the Spiny-bellied spiders. Owing to their spiny bodies, the genus created to contain them has been called *Gasteracantha*, and the particular species here figured is the Florida Spiny-bellied Spider (*G. cancriformis*). Its specific name has been given it on account of its fancied resemblance to a small crab.

In the extreme southern and southwestern part of the country, two other species of this genus occur, specimens of which have not, up to the present time, come to hand. On account of its extraordinary form and conspicuous coloration, our Florida type of this restricted genus cannot fail to attract attention when met with in nature, and this fact will be appreciated by a glance at the accompanying cut.

The identification of this interesting specimen was obtained for me through the courtesy of Dr. L. Q. Howard, at the U. S. Department of Agriculture. This diagnosis, in so far as the colors go, appears to be at variance with what Professor Comstock has to say on the subject in his most useful book on spiders. He remarks that the "adult female measures about one-third inch in length, and is about as wide as long. The abdomen is leathery, and is armed with a fringe of spinose processes. The ground color is yellow, marked

with black spots which vary in number and shape. This is a southern species, which is found in the Gulf States, where it is common in the more southern portions.

"The web is built between the branches of shrubs and trees, and frequently in the tops of tall trees. It is a complete orb, and is either vertical or inclined; the hub is open; the notched zone is narrow; the free zone is wide, and there are many viscid spirals. There is no retreat, the spider resting on the hub with its body over the open space. I have never observed a stabilimentum in a web of this species.

"A remarkable feature of the webs of this species is the frequent occurrence in them of a series of flocculent tufts of silk attached to either the radii or to some of the foundation lines. These tufts are composed of a mass of fine threads, like those of which a stabilimentum is made. The only suggestion that I can make as to the use of these tufts is that they may serve as lures for the attraction of midge-eating insects, which, in their efforts to capture the supposed midges, fly into the web. This method of decorating the web has been observed with certain exotic members of this genus."

From this description it will be noted that Professor Comstock says not a word about there being any *white* in the color pattern of this arachnid, while his figure of the species—apparently the reproduction of a photograph made direct from a specimen—is excellent. He also gives us a fine illustration of a web of this spider. As will be noted, the terminology used in describing the web of this species is quite extensive, which is always an indication that the subject has been quite exhaustively studied, and this is very true of the webs of spiders. Upon some other occasion, a few of these may be described with profit, and the terms used for describing their various features more fully defined.



THE CURIOUS LITTLE SPIDER SEEN IN THIS CUT IS HERE CHRISTENED THE FLORIDA SPINY-BELLIED SPIDER (*G. cancriformis*). TWO SPECIMENS ARE FACING EACH OTHER ON THE LEAF



## THE "WYE MILLS OAK"

BY H. S. CLOPPER

**I**N WHAT is now Queen Anne County, near Wye Mills, Talbot County, Maryland, there stands a giant white oak which in all probability was a mute witness to the early exploration and colonization of Maryland. On account of its isolation, little can be told of its early history. However, at one time, this wonderful old tree was called the "Russum Oak," taking its name from the owner. After the passing of this family, it was named

terest for many years. It is notable for the fact that it has not been injured by time and it is today in full vigor.

Its horizontal spread from tip to tip covers about one-third of an acre which is about what eight ordinary trees would cover. One large limb, the diameter of which was four feet, was removed many years ago, presumably on account of its interference with traffic on the road over which it hung.

At the base of this tree there appeared a large depression filled with water, resembling a spring with no outlet. It is said that at one time there was a chicken yard under its branches and the fowls drank of the water from this supposed spring which was never known to go dry. The water was removed at the time of its treatment and the bark found perfectly sound. This pool was formed, doubtless, by the rain water flowing down the trunk of the tree, which afforded such complete protection to it from the rays of the sun and from drying winds, that the water did not evaporate.

The unusual size and exposure of the base of the tree are probably due to the fact that at one time country folks, in coming to buy at a nearby store, tied their horses there. The pawing of the animals around its base injured the bark from time to time, thereby stimulating callous growths and causing what resemble large knots or blunt stumps. Of course, nature has taken care to provide a large base with tremendous bracing roots to protect and balance the enormous crown with its huge and far-reaching branches. The tree is on a

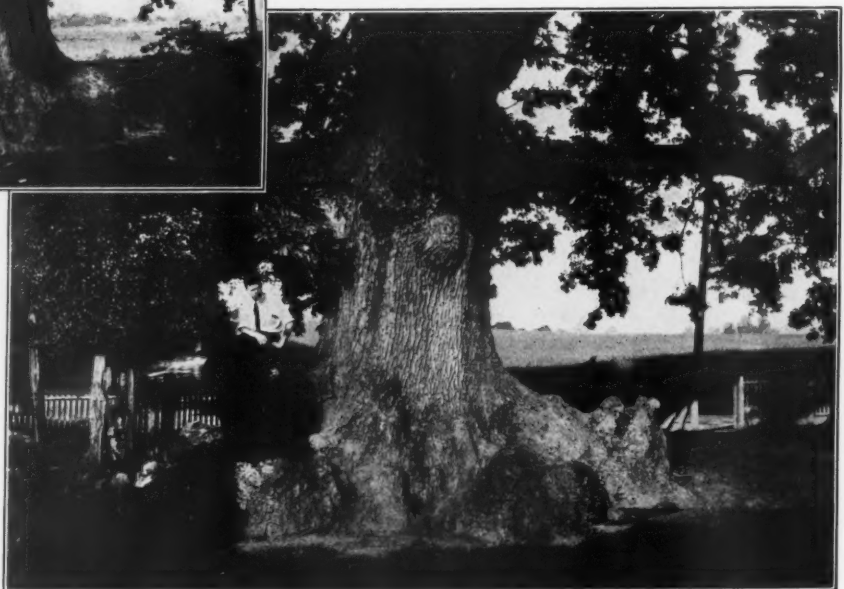


THE TRUNK AND BRANCHES OF  
THE WYE MILLS OAK

The average diameter of nine of the largest branches, measured three feet from the trunk, is nearly three feet and the largest of these measured three and one-half feet.

after the village of Wye Mills to which it affords picturesque beauty as well as sentiment.

This tree is a wonderful specimen and it is doubtful if another of such size and condition can be found in the eastern part of this country. Its age and unusual dimensions have made it an object of in-



BASE OF WYE MILLS OAK

The circumference one foot from the ground is fifty-one and one-half feet, and five feet from the ground is nineteen and one-half feet.



THE "WYE MILLS OAK"

This wonderful tree covers nearly one-third of an acre of ground. It has a horizontal spread of one hundred and forty and one-half feet and is eighty-nine feet high. It is estimated to be two hundred and eighty years old.

concrete road about nine miles from Easton, the county seat of Talbot County. It is easily accessible by motor and is well worth a trip of miles to see. Persons living in the vicinity and those traveling over the Eastern Shore

of Maryland, should not fail to see this giant patriarch of the forest, whose commanding size, beauty, perfection and symmetry make one wish that it were able to disclose the secrets and experience of its long life.

## OUR OFFICES BURNED OUT

On October 6th, a fire in the Maryland Building, Washington, D. C., burned out the offices of the American Forestry Association. The employees all escaped safely but the fire destroyed large numbers of magazines, a quantity of stationery, and a number of records. Luckily membership records were preserved, and aside from a two weeks' delay in issuing the November magazine the members are not inconvenienced.

Ample insurance policies covered the actual losses in stationery, furniture, typewriters, etc., and two weeks after the fire the Equitable Fire and Marine Insurance Company, of Providence, Rhode Island, made a satisfactory settlement.

The lost magazines, however, cannot be replaced by insurance and the members are requested to kindly assist in restoring the magazine files of the Association by contributing back copies if possible. The following issues are particularly desired:

1919—January February, March, April, May and July.

1918—March, April, June, July, August, October and December.

1917—January, February, March, April, May, June, August, October, November and December.

1916—January, March, October and December.

1915—January, February, March, April, May, June, July, August and September.

All months of all previous years.

Please mail magazines to American Forestry Association, Maryland Building, Washington, D. C.

## HUGE CHESTNUT FELLED BY DYNAMITE

**W**HAT was, in all probability, the oldest and largest chestnut tree in the United States, located on the farm of Allen Schantz, four miles out of Quakertown, Pennsylvania, is no more. Some weeks ago, in the presence of about two hundred neighbors and spectators from nearby points, its massive trunk and gnarled limbs were shattered into fragments by a charge of dynamite. This remarkable tree, which had been estimated by U. S. Forest Service experts to be between 300 and 400 years old, was 34 feet, 6 inches in circumference at the base, 11 feet in diameter and about 70 feet high. It had

technical division of E. I. du Pont de Nemours & Company. In preparation for the blast, four ten-foot holes were bored into the earth under the tree and these holes were first "sprung" or enlarged with a half-cartridge of 40 per cent Red Cross extra dynamite so as to accommodate a larger charge. In addition, a Schram air compressor was employed to drill about twenty 3-foot holes



THE GIANT CHESTNUT JUST BEFORE THE BLAST

Situated on a farm four miles west of Quakertown, Pennsylvania, and estimated to be between 300 and 400 years old, this giant chestnut, recently blasted by a charge of dynamite, was declared to be the largest tree in thickness in the country, excepting only the redwoods of California.

been famous locally for years and was one of the show points in that section. Two years ago, a combination of blight and a stroke of lightning killed it, transforming it from a beautiful and venerable monarch among trees into a blot on the landscape.

Mr. Schantz, who is a farmer of the progressive type, decided to remove the dead trunk and utilize the space it occupied for raising crops. He decided to blast out the tree with dynamite. The blasting operations were conducted by a force of expert blasters, under the personal supervision of Arthur LaMotte, manager of the



THE BLASTING

The great Quakertown tree was hurled several hundred feet into the air by the force of the explosion.

into the roots of the tree. The large holes were loaded with a total of 330 cartridges, or 110 pounds of 20 per cent Red Cross extra dynamite. The small holes were charged with a half-cartridge each of the same strength dynamite for the purpose of breaking off the three roots. Fulminate caps were used to detonate the charges, which were connected in series and discharged simultaneously by an electric blasting machine.

When all the spectators and workers had taken themselves off to a safe distance, Mr. LaMotte pressed down the handle of the blasting machine. A deep roar and a dense volume of smoke followed. The massive tree was torn from its age old abiding place, driven into pieces and thrown high and far in all directions. A crater in the earth, 10 feet deep and 25 feet wide, marked its former resting place. The rotten tree trunk was shattered into such small pieces as to be easily handled and the roots were broken out cleanly. The only work necessary before placing this plot of ground under cultivation is to remove the debris and fill in the crater.



## THE PAULOWNIA TOMENTOSA TREE

BY ROBERT SPARKS WALKER

**T**HERE is a fugitive tree in the United States that is attracting general attention of the public now, which has for several years been confused with the catalpa. This tree is what is known as the Paulownia tomentosa or princess tree from Japan. To the average laymen the Paulownia may be easily mistaken for the catalpa, but on careful study there are a number of marked differences. It is generally known that the catalpa bears long, bean-like seed pods, but the Paulownia tree produces a multitude of oval shaped seed pods, much resembling cotton bolls. The leaves of the Paulownia tree are arranged on opposite sides, while the leaves of the catalpa are arranged along the twigs in whorls of three. The Paulownia takes its name from Anna Paulownia, princess of Netherland. In the Southern United States it is spreading rapidly, and may be seen in old pastures, vacant lots in cities, and in damp ravines. But it is highly prized as a shade and for ornamental purposes. The value lies in the beautiful pale violet flowers, which grow two inches long, and appear in panicles

on ends of twigs, in early spring before the leaves appear. The leaves are extremely large and ornamental, particularly when the tree is quite young. It requires two years for the blooming period. That is, the flower buds require two years to make. This does not necessarily mean the tree bears no flowers excepting every

two years. When rather young, I have observed it often happens that the blossoms come every second year, but soon the tree starts a second set of flower buds so that both mature seed pods and first year flower buds are produced the same year. The seed pods, while green are covered with a sticky exudation that protects them

from insects. The trees I have had under observation for the past fifteen years, have been remarkably free from insect pests. The thick bark, with a generous supply of sap, does not appeal to the tastes and habits of the San Jose scale, and on Paulownia trees I have never been able to find a single scale, although all around them oaks and other trees were dying from the ravages of the scale. This one point is well worth serious consideration. The only insect that I have observed on this tree is the leaf miner, and only a very few have I been able to find, which so far have done no appreciable amount of injury.

One of the most remarkable characteristics of the Paulownia, is its rapid growth. Planted in rich soil the Paulownia will grow from five to six

feet the first year, with leaves of huge magnitude, some even attaining the enormous size of 30 inches in diameter. The leaves are ornamental, and make a dense shade. They cling on the trees, remaining perfectly green, never turning to brown or golden in autumn as other leaves do, until the first killing freeze. When the sun comes up on



THE LEAF OF THE PAULOWNIA, OR PRINCESS TREE

This leaf measures 30 inches in diameter, and the tree from which it was taken was only one year old.

the first morning after the freeze, the Paulownia begins dropping its leaves, and by nightfall the tree that was well-clad twelve hours before, will be as nude as any tree in the forest. The rapid growth of the tree, the dense ornamental foliage and the business-like manner of shedding its leaves, will always make it a favorite tree to plant for shade. This habit of shedding the leaves within a single day is no mean virtue since one cleaning of the lawn to remove fallen leaves is all that is necessary each season. I have seen trees grow from seed under favorable conditions, to a height of thirty feet, fourteen inches in diameter at the base, with a spread of the top of thirty-four feet in diameter. It is one of the best balanced trees that I know. Its equilibrium seems perfect. If for example, a single main root be cut off, the tree immediately discards enough of its top to strike a balance with the root system, and while it is doing so, it lessens the size of the foliage.

But it would be a marvelous tree, indeed, if it had no fault. So far as I know, the only objection that can be raised against the Paulownia tree are the thousands of seed pods that cling persistently on the branches throughout the winter. As the winds blow through the tree tops, the Paulownia becomes a gigantic rattle box, which clatter,

until the winds cease. But this objection is not a serious one.

The Paulownia tomentosa is hardy as far north as Massachusetts, but the flower buds are usually killed during the winter, and north of New York City it cannot be relied on to flower regularly.

I do not know of another tree that produces more seed than this one. The seeds are very small and winged, and to satisfy a childish curiosity, I took the time to count one by one the seeds in an average pod, and found almost exactly 2000 seeds.

On one tree in my yard, with this as



THE EARLIEST BUDS

When the Paulownia first begins to bloom in the springtime.



NEXT YEAR'S PROMISE

Showing the flower spike for next year and the beautiful foliage.

a basis, I estimated that there are over twenty-one million seeds on the one tree! A few birds seem to enjoy eating the seeds, especially the blue jays. The Paulownia tree may be propagated by sowing the seeds in early spring or by root cuttings, or greenwood cuttings under glass.

The Paulownia was introduced into the United States from China and Japan, and since coming here it has sown more of its own seed than man. The tree is inclined to branch near the ground which destroys its ability to produce much merchantable timber. The wood is quite soft, light, easily worked and is highly prized in China and Japan. It certainly possesses many admirable characteristics, and well deserves serious consideration when we want to establish shade generally, and it should be given a trial as a producer of wood for commerce.

### A CHRISTMAS SUGGESTION

Are you puzzled about the selection of Christmas gifts?

Why not give a year's subscribing membership in the American Forestry Association as a gift. It will cost you \$3.00, and the member will receive American Forestry Magazine for a year.

This will be an ideal Christmas gift for a child or an adult.

Send the money to the Association and a Christmas Card will be sent you to present on Christmas Day.

# CORNELL FORESTERS IN CAMP

BY C. H. GUISE

EXTENSION INSTRUCTOR IN FORESTRY, CORNELL UNIVERSITY

*"The Cornell Foresters twenty strong  
Left for the woods with a shout and a song."*

WHILE not quite true to literal interpretation as regards numbers, the above lines of one of the Cornell Forester's songs expresses what took place with the Cornell Forestry students on the first of last August. On that date twenty-four students, three instructors and a cook, left Tupper Lake for the annual summer camp, conducted by the Department of Forestry of the New York State College of Agriculture.

Half of the summer term for the seniors had been completed at Ithaca, and everyone was keen to leave the classroom and city for a real camp in real timber. The prospect of spending six weeks in studying forestry in the North Woods was one to which all the students had been eagerly looking forward. This year interest was greater than usual, since this was the first genuine summer camp since 1916. At that time over twenty students had spent the summer in a most successful camp near Saratoga. Then came the war and in the following year the camp had in attendance only about a third of its normal number of students. In 1918 none was even attempted. Had it not been for military or naval service, scarcely a man was present but who would have finished at a previous camp. The fact that these men returned all eager to resume their forestry training after spending from one to two years in either the army or navy, was particularly gratifying. To cruise in real timber, to watch log loaders and log slides in operation and to see big mills in action had long been on their minds, even though they had been engaged in pursuits far different from forestry. Their camp had at last become a reality. The summer camps of Cornell forestry students, at which only seniors and graduate students are admitted, are usually held in the Adirondacks, though in a different location each year.

This summer's camp was located about seven miles north of Tupper Lake on the Turner Preserve. Here the Oval Wood Dish Company is carrying on extensive logging operations, and it may be noted that this was one of the reasons why this tract was selected. Through the courtesy of this company permission was given to use the buildings of an unoccupied lumber camp. These camps

were started to give the men instruction in forestry under true forest conditions. Mensuration, utilization and silviculture make up the work taken by the seniors. Management, special problems, and supervision of the field work of the various crews of undergraduates keep the advanced students busy.

At Ithaca, during the first six weeks of the summer term, definite parties or crews of four men each are organized among the seniors. To each party is assigned a graduate student who acts as chief of party, and who is directly responsible to the instructor in charge for the amount and character of the work done. Not only does this bring to mind the work covered in his undergraduate days, but it also brings him face to face with some of the numerous problems which can never come up in a classroom, and what is still more important, gives him a slight amount of that

valuable experience and responsibility which comes from handling men. Comparatively close by was a large tract of timber, some of which was virgin and some of which had been cut over for softwoods a number of years ago. All types of the Adirondack "North Woods" were included. In this area a tract was selected in which the field work for the 1919 season would be carried on.

The first day was spent in making camp, the next in a general reconnaissance of the selected area, all students and faculty taking part. Thereafter each party was given definite instructions about the work for them to



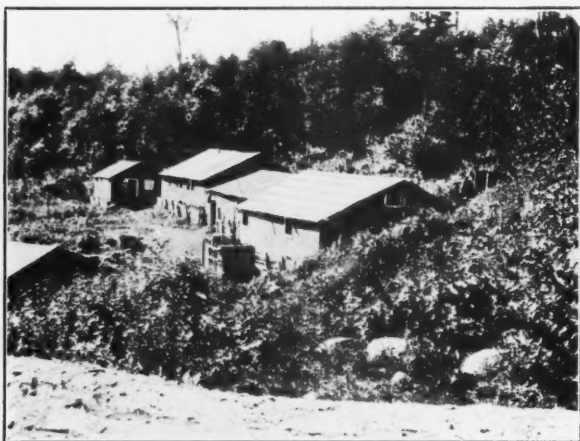
(ALMOST) ALL THE COMFORTS OF HOME

The boys were keen for the camp in real timber this year, as this was the first genuine summer camp since 1916. Located on the Turner Preserve, north of Tupper Lake, the men were given instruction in forestry under true forest conditions.



do and the field work of making the forest map and estimating the timber was started. Although the area was too large for each crew to make their own map and estimate, each strip run was checked by three crews. This was found to bring excellent results as every crew was eager to make the best showing both in quantity and quality of work. It also aided the instructor in keeping a much closer check on his men than would have been possible with each party working an independent area. When the work of mapping and estimating had been finished, growth studies and all other data essential to the preparation of a forest working plan were undertaken.

Time was also taken to visit logging and milling operations, that the men might study at first hand all phases of forest utilization. Excellent facilities were at hand for this. Cutting was being carried on by two camps nearby, while in our own front yard, so to speak, a log loader and train of cars with its crew of men were daily



THE HOME OF THE CORNELL FORESTERS IN SUMMER CAMP

Close by was a large tract of timber, some of which was virgin and some of which had been cut over for softwoods years ago. All types of the Adirondack "North Woods" were included.

reducing the million and a half feet of logs that originally lay on the rollways.

At Tupper Lake the plants of the Oval Wood Dish Company, the Santa Clara Lumber Company and the Brooklyn Cooperage Company were accessible, while the International Paper Company's plant at Piercefield was also but a short distance away. The trips to these industries were always attended with the keenest interest of the students.

Silvicultural studies and problems were also presented. Here again conditions were favorable, for every situation and condition possible was close by. Some areas were entirely first cut, some were cut over for softwoods, while large tracts were at hand that had recently been cut for both hardwoods and softwoods. In addition were lands that had previously been badly damaged by fire. Silvics and silviculture had their full share in the program of work that was outlined.

While not scheduled as part of the camp work the men were fortunate enough to get some experience in fighting fire. During the middle part of August, the

ranger at Tupper Lake called a number of the men to help put out some fires in the vicinity of Mt. Morris.

Interspersed with the days of field work were lectures and conferences in order that the students would fully understand and realize the significance of all problems met in the field. And last but by no means least were the inevitable computations, that always go hand in hand in estimating timber, in preparing maps, and which are incident to the work carried on in the field. The intention of the instructing staff was to make work the main issue and to have the men give their undivided attention to their duties from Monday morning to Saturday noon of each week. And this was the spirit which the faculty successfully instilled throughout the camp.

Fishing and swimming were welcome diversions whenever time permitted. And before and after supper, "horse shoes" or quoits, as is the more proper name, formed the chief source of interest. At week ends more or less of an exodus would generally take place. These were the only times available for additional sight seeing in the Adirondacks.

Hard work produced vigorous appetites, and it is to the credit of the commissary and cook that no man ever left the table hungry. The meals served up by the English cook will always be remembered. As one student put it "he sure could serve a wicked dish." In particular did he exert himself on the last Tuesday of our camp when the closing banquet was held. A banquet in a lumber camp seems rather incongruous, but one we had nevertheless. After the eating came cigars and cigarettes and talks from visitors and members of the faculty. The students did their part with songs and stunts, and the whole affair was a fitting and enjoyable climax to the close of the instruction.

On the following day, Wednesday, examinations started. Even though not at Ithaca, the men had completed a term of residence at Cornell, and "Exams came off on schedule time." Then everyone started in to break camp and pack. That night the 9.21 from Kildare carried the crowd to Tupper Lake where it scattered to the four winds. What had for six weeks been the home of the 1919 summer camp of the Cornell Foresters, once more reverted to nothing but the buildings of an unoccupied lumber camp.

### "NOT HIS FIRE"

A FIRE on the Cleveland National Forest had burned over 180 acres, and after the ranger had had his merry time with it and taken a well-earned rest, he started out to size up the situation.

This did not prove difficult as the trail of the fire led back to a certain rancher's land. Carelessness during brush burning was reckoned as the cause, so a call was made on the rancher, and the ranger proceeded in his usual diplomatic way.

Yes, the rancher knew about the real fire, but was very ignorant as to how it might have been caused.

The ranger then reviewed the entire case.

"Hundred an' eighty acres?" asked the rancher. "No, that wasn't my fire. I only started a little fire."

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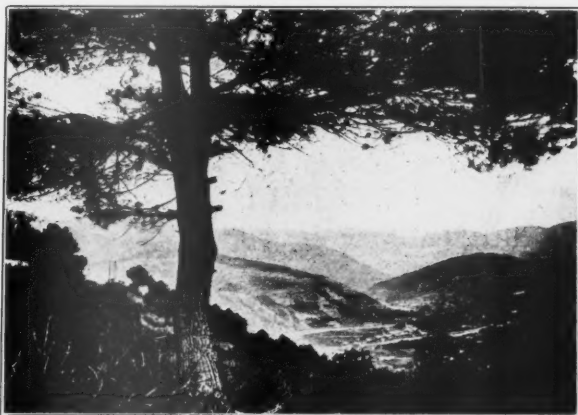




# SENTINELS OF THE FOREST

CONTRIBUTED BY THE AMERICAN RED CROSS

THE branches of the trees bordering the Route Nationale interlaced overhead forming a long vista of restful green. Beyond, on the brown hills and the green, scattered among the fields of yellow mustard and waving grain, the fruit trees hung low in profusion



THIS WAS FRANCE IN PEACE

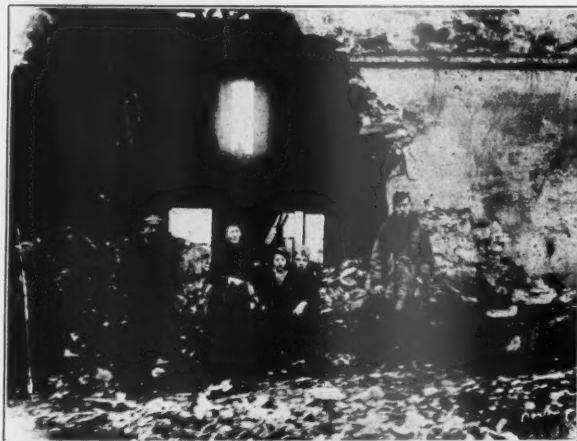
of pink and white blossom. Under foot the daisies rioted and forget-me-nots and clover brushed each other. The cattle browsed on the hills and the little stone houses stood neat among their kitchen gardens. It was France at peace. A sharp turn in the road and the scene changed. Gaunt, broken, burnt stalks of trees stood ghastly sentinel along the Route, stumps of fruit trees dotted the fields, seared and shell-torn, across the road an old peasant woman, bent with age gathered fagots to warm the cellar where she lived, beneath the wreck of her home. It was France at war. German devastation had sacrificed sixty-two per cent of her fire-wood and ten per cent of her lumber, to say nothing of her orchards.

Notwithstanding the heavy demands that came to it from every side, the American Red Cross, realizing the supreme value of "just trees" donated \$10,000 in support of the scheme of the Touring Club of France for replanting the woodlands and orchards of northern France. Early in 1919, ten thousand live trees were shipped from America to the devastated regions.

In America, the Red Cross is not concerning itself with the conservation of trees. It is satisfied that the

government has a well-organized scheme already working, backed up by such large, national organizations as the American Forestry Association, and strong forestry departments in the various States; but it has its eye on the man who looks after the trees, the forest fire guard. That sturdy pioneer, who puts himself beyond what is called civilization to stand sentinel for civilization, the man whose lonely vigil stands between a city and a flood of flame—is anything too much to do for a watcher who warns of such a disaster as the forest fires which swept the Superior Lake district last year?—and fights it, often at the risk of life. The Red Cross spent thousands of dollars to succor the victims of that catastrophe and it will work with the men who prevent disasters that we never hear about. It will continue relief in the out-of-the-way places that it has discovered in the course of its Home Service work with the families of the military men. It has taken comfort, cheer, health and even life to the tiny cottages in deep canons, and to the beacon towers on the mountain tops. It has established itself in districts, ninety per cent of which are not covered by any other relief organization. It likes these big,

free places and it likes the people, and wants to grow up with them, as their families grow, and become a composite part of the home. To continue its work for humanity, the Red Cross must have the united support of the American people. With this end in view, it is holding the third annual Christmas Roll Call. It is hoped and expected that last year's wonderful record of those who affixed their signatures to the Red Cross roster will be broken.



AND THIS IS FRANCE IN WAR



SYSTEMATIC DESTRUCTION BY GERMANY OF THE FRUIT ORCHARDS OF FRANCE

## WHAT NEWSPAPERS SAY AS TO A NATIONAL

WITH October 27, the anniversary of the birth of Theodore Roosevelt, new impetus was given a national forest policy for the editors of the country have been quick to respond to the suggestion of the American Forestry Association that the greatest memorial that the nation can erect to the late president would be a national forest policy. The *Atlanta Journal*, in a leading editorial, says "the importance of a national forest policy was illuminated in an address by Charles Lathrop Pack, president of the American Forestry Association. His speech has attracted wide attention and it is to be hoped this sound advice will receive from Congress the attention it deserves. We believe the increasing interest in this question will make it the easier to impress upon Congress the importance of the enactment of desirable legislation." The *Philadelphia Inquirer* is among the first to take up the suggestion of honoring Col. Roosevelt with legislation looking to perpetuate our forests. To quote the *Inquirer*:

"The birthday anniversary of Theodore Roosevelt will be the occasion of many ceremonies in memory of this virile and robust American, but a suggestion has been made by Charles Lathrop Pack, president of the American Forestry Association, which is peculiarly appropriate. He says that if the people of the United States want to erect a real monument, a lasting memorial for all time, in honor of Theodore Roosevelt, they can do it on his birthday by starting to work for a national forest policy. He calls upon all who are in a position to do so to plant a tree in honor of this great American.

"It goes without saying that the other memorials which have been planned will be carried to completion. The success of the movement for the purpose is already assured, but it would be peculiarly appropriate if his name could be made the rallying cry for the preservation and the perpetuation of the forests."

The *Times*, of Trenton, N. J., is another paper to take up quickly the message which it does in these words: "It is a timely and important plea which Mr. Pack, of the American Forestry Association, makes to the people of this country in connection with the movement to honor the memory of Theodore Roosevelt. Mr. Roosevelt was a lover of all that pertained

to the great out-doors and trees surely have a large part in the kingdom of nature. This being true there can be no more suitable tribute paid to the former President's memory than the planting of trees and the preservation of forests. Forests are among the greatest national resources. Forests are like banks, as Mr. Pack tells the foresters, lumbermen and wood users generally, you must deposit in them if you want to take anything out. Then, in addition to the material benefits to be derived from the restoration and conservation of forests, the planting of memorial

lic sentiment must be aroused in favor of a more adequate and definite policy by the government in regard to forests." The *Geneva, N. Y. Times* impresses the point that "the American Forestry Association heartily supports the demand of the United States Forest Service for a national forest policy," and then points out the need for arousing public sentiment to that end. "Peculiarly fitting would be such a testimonial" says the *Boise Statesman* in an editorial on a memorial for Col. Roosevelt and it adds "in addition is the inculcation of the idea

which should be kept alive in America, the need of reforestation." The *News Press*, of St. Joseph, Mo., calls attention to the fact that "we have prided ourselves on being a business-like nation. Such extravagance as we have shown and continually show with our resources makes us seem to lack the first rudiments of far-visioned business sense." Comparison between this country and the countries of Europe is taken up by *The Republican*, of Findlay, Ohio, which says "the same sort of a situation as faces this country faced the nations of Europe. They recognized it in time and now, governed by stringent forestry laws, have solved the problem." In an editorial reviewing the situation in Missouri *The Globe-Democrat*, of St. Louis, says "we face a serious forest problem resulting from the waste of ax and fire. We need in this country a greater realization of the value of our forests, of the need of their preservation."

The *Commercial-Appeal*, of Memphis enlists in the cause of a forest policy and points out "that it is difficult to get away from the old idea that forests are objects to be exploited. We should stop the reckless clearing off of new grounds and reclaim the waste lands that already afflict the state." In the view of the *Boston American* "we can only preserve our forests by taking public possession of them and applying the principles of forestation that the Germans have worked out." The *Sun*, of Springfield, Ohio, says "the only possible remedy is preservation of great American forests. The American Forestry Association, realizing the acuteness of the situation, asks co-operation from lumbermen so as to bring forcibly to the attention of state legislatures and the national congress the dire necessity for legislation

### THE BEAUTIFUL PICNIC PLACE

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AS THEY FOUND IT.



AS THEY LEFT IT.

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trees is one of the greatest forces for Americanization and keeping aflame the community spirit, born of the war, according to the Association's officers at Washington, who are registering all memorial trees in a national honor roll."

Importance of a national forest policy is viewed by the editor of the *Christian Science Monitor* this way: "What is to be done? Obviously the nation must determine upon a comprehensive and efficacious forest policy, and it must do it without delay. Every state should be behind that policy, and national and state governments should go further than they have ever gone to bring the matter to the active attention of business and industrial communities everywhere." In the opinion of the editor of the *Houston Post* "pub-

## FOREST POLICY AND A ROOSEVELT MEMORIAL

that will at least in a measure remedy the situation." The *Twin City Sentinel*, of Winston-Salem, N. C., says the "matter is one of immediate importance. It cannot be deferred indefinitely. Something should be done and now." It then quotes in full the article from *The Manufacturers' Record*, of Baltimore, which is based upon the statements of the American Forestry Association. "No mathematical genius is required to see the finish," says *The Advertiser*, of Elmira, N. Y. "Forest products are indispensable in almost every industry and trees are needed for a long list of necessities, from print paper to wagons, from lead pencils to aeroplanes. High cost of lumber means high cost of all these commodities." *The Plain Dealer*, of Cleveland, touches upon the call of war for wood and says "on a far vaster scale America raked her forests for war material. She cut millions of her Douglas spruce of the northwest, and throughout the country she selected the walnuts for special use in aviation. There is as yet no satisfactory indication that the nation is prepared to remedy the damage of war."

In *The Record*, of Philadelphia, we find that the editor believes "the war ought to do something to promote forestry in this country." He calls attention to the fact that two million men who saw the beautiful tree-lined roads of France are now back in this country. "We have got to make systematic efforts to replace the spruce forests on which we must depend for print paper," *The Record* concludes.

As a fitting memorial for these men who have returned and for those who did not return the planting of memorial trees continues to be a very popular subject of editorial comment. "Each year of added growth" says *The Telegram*, of Youngstown, Ohio, "should serve to bring out even more prominently the sacrifice made by the American boys, instead of allowing that memory to die." In the opinion of the editor of *The Leader-News*, of Cleveland, "it will contribute to the beauty, charm and welfare of the country and the happiness of the living, now and in the years to come, while it rears beautiful monuments to the dead." Memorial Tree planting along state highways is urged by *The Journal*, of Pierre, S. D., whom it strikes "as a mighty good scheme for this state." The sentiment is well said in *The Times*, of Flushing, N. Y., whose editor points out that "trees continue to grow and flourish years after the hand that set them out has dropped its working tools." In *The Observer*, of Charlotte, we find that "the planting of fruit-bearing trees along the public highways is an old hobby of

*The Observer*" which calls attention to the forward step the legislature of Michigan has taken in regard to bordering its highways with nut and fruit trees. *The Vindicator*, of Youngstown, takes up the action of the Michigan law makers and asserts that Ohio is the best state in the Union to do that very thing. *The Dispatch*, of Columbus, Ohio, has an editorial on the

### FOREST MEMORIAL FOR ROOSEVELT

(*The Houston Post*)

As one of the original advocates of the conservation of natural resources, and a zealous worker for the preservation of the forests of the country in particular, the late Theodore Roosevelt is entitled to a large share of the credit for present day sentiment against waste and reckless exploitation of these resources.

Remembering the former president's conspicuous leadership in this movement, the suggestion of Charles Lathrop Pack, president of the American Forestry Association, that the American people observe Mr. Roosevelt's birthday by starting to work in earnest for an adequate national forest policy is most appropriate, and will doubtless meet with general approval among the people.

It has also been suggested that part of the Roosevelt Memorial fund be expended in setting aside a national forest in his honor, a form of memorial that is particularly fitting to the great student and lover of nature, and which would undoubtedly have met with his hearty indorsement, had he been consulted on the matter during his life time. If the American people desire to erect a memorial to him, it would be difficult to select anything more appropriate.

The American Forestry Association is appealing not only for preservation, but conservation, the latter including the renewal of the forests. The Roosevelt memorial is but an enlargement of this idea. If it is carried out, it will be not only a fitting tribute to a great American, whose love of trees and forests was a passion with him, but it will result in great material benefits to the people of the country. Such a memorial is both idealistic and practical—a combination of characteristics which was the source of much of the power for leadership in Theodore Roosevelt himself.

work of memorial tree planting by the American Forestry Association which has been widely quoted throughout the country. In the opinion of the editor of *The Messenger*, of Owensboro, Ky., "systematic nut tree planting and replanting along the roadsides of this country might not be so 'nutty' as it sounds." *The Telegraph*, of Harrisburg, calls attention to what can be done in memorial tree planting if the or-

ganizations having the welfare of a community at heart will co-operate with the American Forestry Association. "The setting out of Memorial Trees is a fine thing" says *The Talk*, of Alexandria, La., in pointing out the possibilities for classes in schools and colleges to plant trees either when they enter or leave the institution. *The Christian Herald*, of New York City, points to what New Bedford, Mass., has done and calls trees a community asset. "It is a splendid idea" says *The Beacon*, of Ashtabula, O., and should be entered into with enthusiasm and interest by the people of this country." *The Courier*, of Lafayette, Ind., urges the people of that city to take up memorial tree planting at once. Memorial Tree planting, in the opinion of the editor of *The News-Times*, of South Bend, is the way for the private individual to do something for posterity. The trees will make the city famous in years to come in the opinion of the editor of *The Republican*, of Shelbyville, Ind., expressed in urging memorial tree planting. *The Democrat*, of Goshen, Ind., enlists in the plea for nut and fruit bearing trees. *The Evening Mail*, of New York City, has an editorial on the planting of fruit trees in Bryant Park and quotes Mr. Pack on the possibilities of utilizing the back yard and vacant lot for providing "fruit f. o. b. the kitchen door." The memorial tree planting movement is a wise one in the opinion of the editor of the *News and Courier*, of Charleston, South Carolina, which calls on the South in particular to take up the plan. "The American Forestry Association," says the *News and Courier*, "is wisely taking advantage of the keen and widespread interest in good roads to promote the cause which it has especially at heart—the cause of reforestation. The Forestry Association's efforts should be pushed and in the South especially it should be given the encouragement which it merits." In *Motor Life* we find the leading article with fine pictures devoted to "Plant A Tree for Remembrance" which tells of the Association's work. The editor also devotes an editorial to the subject. "Let's not stop; let's build the 'Roads of Remembrance' and see that they are lined with magnificent trees" writes the editor of *Motor Life*, who adds that "it strikes a responsive chord in our hearts." Every member of the American Forestry Association should rally to the cause of forestry and write his editor, in the name of the American Forestry Association, thanking him when space is given to forestry, memorial tree planting or like subjects. Then too each member should take the lead in tree planting in his community and report all activities to the Association.



## CANADIAN DEPARTMENT

BY ELLWOOD WILSON

PRESIDENT, CANADIAN SOCIETY OF FOREST ENGINEERS

THOSE interested in industries which use trees as their raw material in Canada are taking active steps to conserve and better utilize the existing supplies. On the 14th of October there will meet in Quebec a joint Committee of the Woodlands Section of the Canadian Pulp and Paper Association and the Quebec Limit Holders' Association to discuss recommendations to the Quebec Government for a change in the cutting regulations and legislation leading to compulsory reforestation. All the important lumbering and pulp and paper industries in Quebec, Ontario and the Maritime Provinces will be represented. The discussion will occupy a day and on the morning of the fifteenth a committee of the conference will have an interview with the Minister of Lands and Forests, Hon. Mr. Mercier, to present their views and make recommendations. It is hoped that by mutual discussion and co-operation the government and the wood using industries may work together for the protection, proper utilization and perpetuation of the forests. This getting together of wood-users, foresters and the government should have the best of results.

The report of the results of the expedition headed by Captain Daniel Owen, which explored Laborador timberlands by aeroplane, is very interesting and it is hoped that more details than were embodied in the newspaper dispatches may soon be forthcoming. There is no question whatever that such an expedition could have done nothing in the time taken without aerial transport, but we are anxious to know what landing places were used for aeroplanes, and, if the number of photographs, said by the press reports to have been taken, 300,000, is correct. It has been the experience of those who have visited Laborador that the timber was small and was confined entirely to the river valleys, the hills being either bare or covered with stunted spruce. Volume tables worked up for Laborador spruce show the timber somewhat shorter and smaller, on the average, than that of the territory west of Quebec.

That aerial transportation is ideal for reconnaissance and even for more detailed estimation of forest lands is beyond a shadow of doubt. The writer has made a reconnaissance of over 1,500 square miles from the air and each flight over a country develops one's ability to see more detail and estimate more closely. Sitting in a plane with a map one can mark the areas burnt, those in different types of timber, those which are restocking, etc. The height of the stands can be estimated and a rough

approximation of the proportion of softwood to hardwood in the crown cover. At three thousand to four thousand feet, jobbers' camps and dams can be seen and marked on the map, the drainage of a country and the contour studied and the way in which logs can be taken out of a certain district. A woodlands manager could easily, in a few flights, lay out his winter's operations without difficulty and to far better advantage than in the office.

Where, as in Quebec and Ontario, logging is carried out at long distances from civilization, often from one to two hundred miles, and where rail transportation seldom takes one nearer than 30 or 40 miles, planes would be invaluable for travel to and from the operations, especially for the higher executives who now seldom see anything of woods operations. With a plane a tour of all the operations could be made in two or three days. In case of serious accidents in the woods, injured men could be brought out quickly and as comfortably as if in bed.

The detection and reporting of forest fires is very easy, and during the past season a Johnson gasoline fire pump and 1,500 feet of hose was always ready to be transported to the scene of a fire. In the St. Maurice Valley there is almost always a lake within two to three miles of a fire, on which a landing could be made. As our experience shows that fires nearly always occur on lakes or rivers, the only routes of travel, the planes could almost always reach them. With settlers, campers and berry pickers, the almost daily presence of planes over their operations is the strongest kind of deterrent for carelessness or wilful setting of fires. I think it is safe to say that the seaplane or aeroplane with pontoons will be one of the most important aids to fire protection and forestry work that has so far been developed.

Mr. G. C. Piche, Chief Forester of Quebec, held a conference of the Managers of the Quebec Forest Protective Association on October 20, at the government nursery at Berthierville, and a visit was made to his plantations on the drifting sands at Lachute.

A party of about twenty of the Senators of the Dominion Parliament made a visit to the industries in the St. Maurice Valley and inspected the nurseries and plantations of the Laurentide Company. Senators White and Bostock, who are directors of the Canadian Forestry Association, were especially interested.

Dr. Hewitt, head of the Dominion Entomological branch; Professor Swaine, of the

same branch, and Clyde Leavitt, forester to the Commission of Conservation, visited the co-operative Forest Experiment Station of the Commission and the Laurentide Company, at Lac Edward, Quebec. Mr. Leavitt made the trip from Grand Mere to Lake Edward in a seaplane.

Mr. H. G. Schanche, Forester to the Abitibi Pulp and Paper Company, has commenced work on a map and estimate of their limits and is breaking up ten acres for a forest nursery. Mr. Mills, late of the staff of the Commission of Conservation, has joined his staff.

Lieut.-Col. George Chahoon, Jr., president of the Laurentide Company, and Mr. H. Biermans, president of the Belgo-Canadian Pulp and Paper Company, made flights in the seaplane and expressed themselves as being much pleased with the machine and convinced of its practical value.

Robson Black, secretary, Canadian Forestry Association, is leaving for a trip through the west to address meetings of the Canadian Creditmen's Association. Mr. Black is doing splendid work for forestry along the most practical lines and is rapidly educating the public to the necessity for properly using our forest resources.

Mr. A. D. Gilmour, forester of the Anglo-Newfoundland Development Company, is pushing rapidly a map and estimate of his company's limits and is also handling their logging operations. Base maps, showing lakes and rivers is already completed.

After a 750-mile trip on horseback, through the interior of British Columbia, M. A. Grainger, chief forester, reports the fires during the past season the worst since 1910.

That England with an area of less than the State of New York is planning to invest \$17,000,000 in a ten-year campaign to reforest 250,000 acres of land, inspires Dean Hugh P. Baker, of the New York State College of Forestry, at Syracuse, to comment on the need in New York State of particularly noting England's condition and her plans. Great Britain will replace for future commercial use the timber used in France during the war by this expenditure of many millions, while Dean Baker points out, New York has difficulty even in putting through a plan of co-operation with lumbermen and other private holders for steps toward the growth of timber for the future. He sees in all this a need for a definite forest policy for his state as well as for the nation.

No. 1

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By Home Unit of Philadelphia, Base Hospital No. 10: Helen Fairchild, Paul N. Acosta, James Allen, Frank X. Dochney, John Wesley Thomas, Kenneth B. Hay.

### CLAREMONT, CAL.

By Mr. S. D. Moles: Keith Powell.

### ROBINWOOD, CAL.

By Benjamin King: Capt. Henry Warren Brown.

### SAN FRANCISCO

By California Federation of Women's Clubs: Alice A. Fredericks.

### MERIDEN, CONN.

By Robert C. Bemis: Leslie Carter Bemis.

### NORWICHTOWN, CONN.

By Scotland Road Social Club: Albert E. Dexter, Frank A. Wilcox.

### LUTZ, FLA.

By Lutz Women's Club: Boys of Lutz and vicinity.

### ORLANDO, FLA.

By Mrs. F. A. Lewter: Sergt. Robert D. Lewter.

### HINSDALE, ILL.

By Mrs. Ben Allen Samuel: Grayson Hewitt Brown.

### SOUTH BEND, IND.

By Women's Civic League: Fred C. Pearson.

### BEREA, KY.

By Woman's Club: John B. Gabbard, Dee Walker, Gentry Kennedy, Cleveland Cady Frost, John E. Harwood.

### ANNAPOLIS, MD.

By First Methodist Episcopal Church: Our Heroes First M. E. Church.

### NORTH WILBRAHAM, MASS.

By Soldiers Welfare Committee: George M. Kingdon, Nelson S. Vincent, Edward F. Powers, Clarence Green.

### SOUTHBOROUGH, MASS.

By Margaret and Caroline Oveson: Capt. G. K. Sabine, Jr.

### ATLANTIC CITY, N. J.

By Illinois Avenue School: Pennington Crocker, George Randolph.

### ROSSELLE PARK, N. J.

By Mr. W. G. Elicker: Charles S. Montgomery, John E. Williams, Thomas Paulson, Clarence Fanning, Santo Peluso, Joseph E. Macedo, Bertram A. Rowe, Edward Fanning, Petro de Palma.

### RUMSON, N. J.

By Edward D. Adams: Lieut. Samuel Harriot Compton, Corp. Christopher Doughty.

### MT. VERNON, N. Y.

By Mrs. A. W. Bertine: William Wiley Hayward.

### GREENWICH, N. Y.

By Greenwich Woman's Club: Frank Stiles, Homer Barber, William Steenson, John J. Millett, Joseph Adamson, Eugene Towns, Lester Hyatt, Orin Andrus, Walter Flatley, William J. Welch, William Lyttle.

### SIDNEY, N. Y.

By University Club: Charles L. Jacobi, Horace Beal, Peter C. Poach, John Joseph Diminco, Claude Eufel, Ray C. Hollock, Frank Young.

### CINCINNATI, OHIO

By Tuesday Club, First Unitarian Congregational Church: Soldiers and Sailors Who Gave All or Worked That Our Country and All Countries Be Free. (7 trees).

### ERIE, PA.

By Hugh A. Cargo: Sergt. John D. Caldwell.

### NEWVILLE, PA.

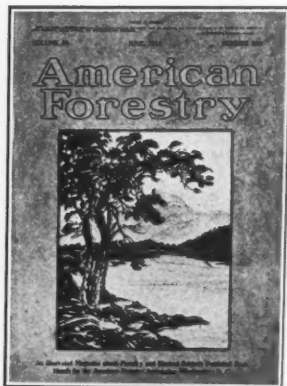
By Woman's Club: Thomas Z. Wagner, James Failor, John E. Abrahams, Sgt. Raymond V. Martin.

### DALLAS, TEX.

By University of Dallas: Joseph Murphy, Joseph Byrne, Orion Keele, J. Wendell Spake. By Women's Forum: R. Wilbur Weaver, Roy E. Mathews, Horace Higginbotham, Eugene M. Ellison, Reed Bodenhamer, Leslie D. Everett. By Council of Jewish Women: Charles Klein, Nathan Black, William Kleinman.

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## STATE NEWS

### NEW JERSEY

**CO-OPERATION** along a new line between the Forest Fire Service of the New Jersey Department of Conservation and Development and the State Highway Commission has been entered into with a view to decreasing the number of forest fires originating from highway construction.

The Forestry Department has provided a leaflet entitled, "Forest Fire Prevention and Highway Construction," which calls attention to the danger of using coal and wood burning machinery under any conditions and emphasizing the necessity for adequate spark arrester equipment where these fuels must be used. It urges a substitution of oil fuel or gasoline power just as rapidly and as universally as possible for all such machinery. It emphasizes the need for increased care in using fire for brush and refuse disposal, points out the legal requirements for such fires and makes suggestions as to methods and times of the work. It calls for greater emphasis by those in charge on the necessity for care by employees with smoking materials in and near the woodland areas. The pamphlet is illustrated with 10 cuts, featuring the points particularly stressed in the text.

The State Highway Engineer will hereafter enclose one of the pamphlets when sending specifications to all those bidding on highway work for his Department. Through the Highway Department the Fire Service will also be enabled to reach a large number of other contractors engaged in this sort of work throughout the State.

In addition, the State Highway Engineer is supplying the State Firewarden with the names of all those engaged in road construction and through road inspectors in the field is giving notice of the condition of all steam machinery used on each job, and particular notice of defective machinery or carelessness on the part of the contractor. This will permit the firewarden's field force to personally interview the foreman in charge of each job where the work is in or near the forested areas, and promptly deal with carelessness or indifference where necessary. Both the publication and subsequent personal interviews will point out to the contractors that responsibility rests with them for all forest fires resulting from any cause connected with their work even though by accident, as is provided by the State fire law. They will also be informed of the necessity for fire permits for using open fires for any purpose on the job and of where and how to obtain these permits.

Though the number of fires annually, coming from these sources is not a large

proportion of the total, and although they are among the most preventable, yet where carelessness or indifference on the part of the contractor is found, they have been among the most serious in several instances.

In his annual report, recently submitted to the Governor, the State Firewarden of New Jersey comments upon the fact that of the 796 forest fires, large and small, recorded during the calendar year 1918, responsibility for 432, or 54 per cent, was fixed upon some individual, or agent. There were also 59 cases involving technical violation of the fire permit law without ensuing fires. The penalties collected during the year, without reference to damage claims, amounted to \$2,956. Can any state or section surpass this record of effective fire law enforcement?

### NEW YORK

**ONE** of the largest tracts of forest land ever approved for purchase by the state at a meeting of the Commissioners of the Land Office was acted upon favorably recently when the Conservation Commission's recommendation to purchase the Santa Clara Lumber Company's tract in Township 27, Franklin County, was approved. This tract involves practically 18,000 acres of wild forest land and comprises some of the most scenically beautiful sections of the whole Adirondack region, including the whole of Mt. Seward and Mt. Seymour. As soon as titles to the tract have been approved by the Attorney General's office this valuable area will be added to the Forest Preserve and be reserved for all time for the benefit of the people.

New York State will lead the nation in intensive application of forestry to idle lands, under plans now being formulated in Otsego County.

This county, whose hills and valleys, lakes and streams formed the setting for Cooper's Leatherstocking Tales, is organizing a system of county and township forests, on the basis of a forest survey made by the New York State College of Forestry at Syracuse. The plan is for each township to plant a forest of roughly 100 acres as a starting point, the several forests to be part of a county system, to be connected up with highways to make them accessible from all parts of the county, and all to be in accordance with a general plan. The township forest, however, will be the unit, and it is hoped by the Otsego County Improvement Association to have plans so far advanced that the first planting can be made next spring.

If this is done the New York State College of Forestry at Syracuse will send foresters to direct the work, as preliminary

surveys have already been made. The plan is to plant at least four township forests next spring, and increase the number by planting others in the fall, until all the twenty-four townships of the county will, within a short time, be actually growing trees for future generations.

The townships will buy the land and operate the forests but the organization work is being done by the Otsego County Improvement Association, which is just completing a membership campaign to give it \$25,000 a year for the promotion of this and three other general projects.

This project is probably the first in America for the planting and owning of a communal forest for future economic returns, and will be used by the New York State College of Forestry at Syracuse as a demonstration of the possibilities of forestry in New York State.

"The future of the Adirondacks depends upon the development of its hardwoods."

This declaration by Prof. Edward F. McCarthy, of the New York State College of Forestry at Syracuse, at the conclusion of three months of work with a party of foresters in the western Adirondacks, is his viewpoint upon the problem of forestry in New York State, and his work has a particular bearing upon the pulp and paper industry. Prof. McCarthy was assisted by Prof. H. C. Belyea, of the College of Forestry, and with three assistants the two men spent nearly three months in the Western and Northern Adirondacks where they maintained their camp. Considerable study was made in other portions of the Adirondacks, however, and important results were attained in a study of the reproduction of yellow birch.

The study was devoted entirely to yellow birch, which because of its present use to a small extent in the paper industry, and because of its rapid growth offers a possible solution for the threatening shortage of pulp wood for New York's paper mill investments of many millions of dollars. The study was to determine the value of yellow birch in the future of the Adirondack forest, and the study extended to birch in all types and conditions of forest growth.

The importance of the study is shown by the fact that the war census showed there was only about 5,000,000 cords of soft wood in private hands, the rest being in state forests, not opened for cutting. This would be a supply of only about five years for the mills, if they were not importing in great quantities from Canada to meet their needs.

The importance of birch is not only for its own use, if it can be so developed, but particularly in its relation to other woods, for it has always been a big factor, and will continue to be, in reproduction of any

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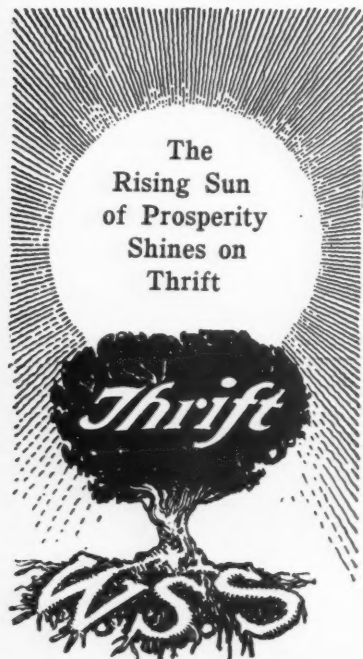
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forest, as a rapid growing protective cover for the slower growing hard woods.

The study made by the College of Forestry experts was to determine such elements as the rate of growth, reproduction, its relative growth compared to other hard and soft woods, in order to secure definite data on which to base future operations in the forests. The study was extremely detailed, for in some sections strip surveys were made to include every growing tree, even to those an inch in diameter on a typical plot.

That the replanted forest area grows more rapidly than was the case in the virgin forest is now definitely known. Just as the cultivated grain grows and produces more luxuriantly than the same grain prospered in a wild state, so do the trees grow faster, particularly in their early years, than was the case under natural conditions. The virgin forest contains trees which lived 250 to 300 years. Under favorable artificial forest conditions, if a replanted forest can be called artificial, the tree would reach a similar diameter in much less time, and the growth is particularly rapid in the earlier years.

"The future Adirondack forest will be largely hard wood," said Prof. McCarthy, returning from his survey, "and the problem now is to develop the market for the coming hardwood which is replacing the old soft wood forests, so that ultimately the maximum amount of softwood may 'come back' under a policy of conservation."

## OHIO

THE annual summer meeting of the Ohio Forestry Society was held at Carbondale, September 12th and 13th. The members of the Society and their friends were the guests of the Carbondale Coal Company who provided an elaborate camp for the purpose.

The program consisted of trips over the forest plantations and the native woodlands of the Company and was supplemented by addresses which occupied one session.

The Carbondale Company is a pioneer in forestry practices. Its surface tract of approximately 3000 acres is mostly timbered. A large portion of the timber required to operate the mines is provided from their holdings. The Company operates its own mill, and all cutting on the tract is made in accordance with forestry principles.

Some 12 years ago, Colonel Richard Enderlin, president of the Company, undertook to reforest the old fields. The species used were largely tulip poplar, black locust and white and red pines. Definite areas have been planted annually since that time, and the plantings on the whole have been very successful. Considerable data may now be secured from these plantations which is of special interest to coal companies in Southwestern Ohio.

Colonel Enderlin gave a very interesting talk on "What an Army Cantonment Has Done for a Community." The Colonel was

chairman of the Chillicothe War Board and in that capacity had charge of much of the work in preparing for the large Chillicothe Cantonment. It was largely his executive ability and inherent leadership that made possible such rapid progress in completing this camp.

G. D. Cook in charge of the Cincinnati Municipal Forest told what the 10th Engineers accomplished in the forests of France.

J. W. Calland, Forester of the Miami Conservancy District, gave a splendid account of the big project under way to control the floods of the Miami Valley. The Conservancy District comprises 33,000 acres of land, which is divided into 5 retarding basins. These basins are the valleys of rivers and creeks, the confluence of which is peculiarly conducive to severe floods that have done much damage to the densely populated districts of the Valley in the vicinity of Dayton. The retarding basins are formed by the erection of immense earth dams from 400 to 500 feet in width across the valley at favorable locations. The completion of this project will render impossible the recurrence of such catastrophes as the 1913 flood.

F. W. Dean, Assistant State Forester, spoke of the French forests and forestry.

Edmund Secrest, State Forester, outlined the proposed Federal and State Forestry Program. He advocated:

1. A definite policy for the acquisition by the State of large areas of the rough sterile lands in some of the Southern Ohio counties. Some 250,000 acres could eventually be purchased by the State without the inclusion of any considerable agricultural surface.

2. A greater and more persistent campaign of education coupled with more material assistance to the owners of private woodlands.

3. Acquisition by cities of municipal forests.

4. More systematic and intensive research and experimentation, especially in forest management and utilization. Since the forests of the State are largely farm woodlands the problem of fire protection is not a formidable one, although it should receive attention in certain sections.

## WISCONSIN

IN several Wisconsin counties the forest scourge known as white pine blister has secured a foothold to an extent that is causing the State Department of Agriculture apprehension. A field conference was called in Polk, Barron and St. Croix counties to consider means for staying the progress of the disease, and was attended by Commissioner C. P. Norgord, and the acting state entomologist, Dr. Fracker.

Among the men present were forest pathologists of the United States department, Brown and Syracuse Universities, and Prof. L. R. Jones, of the Wisconsin Agricultural Experiment station, in addition.

(Continued on Page 1500)

## FOREST SCHOOL NOTES

### UNIVERSITY OF CALIFORNIA

**S**INCE the last writing the Forestry Club has held two well attended meetings and planned for activities during the semester. A club hike will be taken to Lagunitas and Little Carson Canyons in Marin County on Sunday, October 12th. A large attendance is expected as the route of the trip lies through some very fine bodies of redwood and Douglas fir timber.

A get-together meeting of all students and faculty members of the College of Agriculture was held September 15th. Dean Hunt welcomed the 250 freshmen and the large number of former students and faculty returning from military service. His message to all was "Do something every day, don't just start something."

Professor Walter Mulford is taking a much needed vacation in the mountains of Santa Cruz County.

Professor Donald Bruce has gone to Portland, Oregon, to attend the sessions of the Pacific Logging Congress and Western Forestry and Conservation Association there.

The Forestry Club members are discussing the possibility of resuming publication of "California Forestry," the Club magazine which was discontinued because of the war. It is a big undertaking but a majority of the boys seem to feel that they can put it through successfully.

Ninety men of the Australian overseas forces have come to the University for several months' training before returning to their country. Most of the men are at the farm school at Davis. Lieutenant Norman Jackson, who plans to go into the lumber business with his brother in Australia is registered in several university courses. He enlisted in 1914, went through the Gallipoli campaign and served until the end of the war in France. He has many interesting stories to tell of incidents which occurred during his varied military service.

### UNIVERSITY OF IDAHO

**MR. C. EDWARD BEHRE**, recently returned from a two years' service overseas with the forest engineers, has accepted a call to an assistant professorship in forestry and arrived to take up his work October 1. Mr. Behre is a graduate of the Sheffield Scientific School, and received his master's degree in forestry from the Yale Forest School in 1917, graduating with highest honors. His training and experience fit him admirably for his new position, and he comes to it with strong recommendations from those who know his work.

I. W. Cook, associate professor of forestry, has resigned to accept an important position with a large lumber company. He has been with the School of Forestry sev-

eral years and has rendered both the University and the state splendid service in promoting the cause of forestry.

The ranger course offered by the School of Forestry is designed to meet the needs of rangers and guards wishing to prepare themselves for more rapid advancement; for young men planning to take the civil service examination for the position of forest ranger in the U. S. Forest Service; also for men connected with some phase of the timber industry who wish to acquire a knowledge of the general principles of forestry, but who cannot spare the time for a fuller course.

Young men never had so many reasons for making thorough preparation for their work as right now. This is especially true of those engaged in forestry and the forest industries, as the demand for men trained in these lines is far in excess of the supply, and opportunities for advancement were never better. This course offers a chance to share these opportunities. It is given at a time of the year when you can best get away from your work, yet each session is of sufficient length to enable you to make your training thorough.

Every facility of the School of Forestry is offered to short course students just as fully as to the students of the long course. The equipment for handling the work is complete and up to date. The work will consist of laboratory exercises, actual field practice, and lectures by the forest faculty, Forest Service officials, lumbermen and others.

Admission to classes is without examination. The work is of high school grade, hence any young man who has had the equivalent of eighth grade or grammar school preparation may attend. For further information apply to F. G. Miller, Dean, School of Forestry, University of Idaho, Moscow, Idaho.

### NEW YORK STATE COLLEGE OF FORESTRY AT SYRACUSE UNIVERSITY

**S**WEDEN, through the American-Scandinavian Foundation, has sent a trained forester, A. E. F. Schard, to the New York State College of Forestry at Syracuse for special study in American methods in forestry, on an inter-change of students by which the United States sent Henry M. Melloney, of the New York State College of Forestry to Sweden for study there. Both men rank as fellows of the American-Scandinavian Foundation, and will get a handsome financial allowance to make possible their securing the best information possible on forestry methods in the countries to which they are sent. Mr. Schard came to this country to study particularly

## PULPWOOD TIMBER

ON

## BLACKFEET NATIONAL FOREST MONTANA

The Forest Service calls the attention of paper manufacturers to a tract of timber on the North Fork of Flathead River, within the Blackfeet National Forest, Montana, and approximately 12 miles from Columbia Falls, on the Great Northern Railway. This area contains at least 500,000,000 feet of stumpage, 70 per cent of which consists of Engelmann spruce, hemlock, and other species suitable for wood pulp. Undeveloped water power is available in sufficient quantities for manufacturing purposes.

All information available concerning this area will be furnished upon request by the District Forester, U. S. Forest Service, at Missoula, Montana. The Forest service is prepared to consider terms of sale for this stumpage on a basis which will make the installation of a plant for the manufacture of paper feasible. Inquires are invited.





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timber transportation and commercial phases of forestry, and a special course has been arranged at Syracuse to permit him to do the special work which will be of value to him and promote international relations.

Mr. Schard has been in the Swedish forest service since his graduation from one of the big universities of his native land, and has traveled extensively in Germany and France and other countries studying forestry methods. He is one of the first students ever sent to the United States for forestry study under the operation of the American-Scandinavian Foundation and the recognition given the New York State College of Forestry is accentuated by the fact that this year marked the first time that the Philippine government has sent a student to Syracuse for forestry study, in the person of Luis J. Reyes, who was in the Philippine forestry service six years before coming here for special study.

A surprising demand from American industry for men trained in forestry has been disclosed through the placing of graduates the past few weeks by the New York State College of Forestry at Syracuse. The demand for men not alone from concerns in the lumber industry, but especially from industries using the products of the forest in manufacturing. Announcement has been made of the placing of seven foresters who are returned soldiers, and of three other recent graduates of the College of Forestry in positions applying to practical life the training given in forestry.

## OREGON STATE COLLEGE OF FORESTRY

**P**ROF. H. S. NEWINS, who spent more than a year with the Aircraft Production Division of New York, as inspector of timber used in airplane construction, is back in his former position as Professor of Forestry in the Oregon State College. He made the trip from Brooklyn, New York, to Corvallis, Oregon, by auto, covering the distance in thirty days.

Forty members of the School of Forestry attended the sessions of the Pacific Logging Congress in Portland, October 8-10.

P. F. Shen, a junior student of the School of Forestry, who hails from the south of China, is completing his course in the Yale Forest School. Shen plans to cover the principal forest regions of the United States and then return to his own country to aid in working out forestry problems there.

At the sessions of the Pacific Logging Congress, held in Portland, October 8-10, the following Forest School men were in attendance: E. T. Clark, Professor of Logging Engineering, Washington State University; Donald Bruce, Professor of

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Forestry University of California; Dorr Skeels, Dean of the Forest School of Montana; E. M. Buol, Professor of Logging Engineering; H. S. Newins, Professor of Forestry, and G. W. Peavy, Dean of the School of Forestry, Oregon State College. During the Congress these men held a round table discussion relative to the problems peculiar to the western forest schools.

#### PENNSYLVANIA STATE FORESTRY SCHOOL

**P**ROF. C. R. ANDERSON has been appointed Extension Representative in Forestry. He will continue to give the courses in Management and Finance in the Forestry School and devote a portion of his time to woodlot work in the state.

The enrollment of students in Forestry is as follows: Seniors, eight; Juniors, seven; Sophomores, twenty-four; Freshmen, twenty.

C. B. Davis, '17, is Forest Assistant to H. G. Schanche, '18, Forester, with the Abitibi Power & Paper Company of Canada. L. G. Baltimore, '18, is City Forester of Harrisburg. Charles Claxton, '17, has resumed his position in charge of the Forestry Department at the Lincoln Memorial University, Tennessee. H. E. Richards, '16, and O. B. Gipple, '15, are again with the Wheeler & Dusenbury Lumber Company at Endeavor, Pennsylvania, working under the direction of R. R. Chaffee, Harvard Forest School, 1910, Forest Engineer for the company. Chaffee had charge of the courses in Lumbering at Penn State for several years before engaging in practical work in Lumbering. R. A. Zeller, '15, is Forest Examiner on the Chugach National Forest, Ketchikan, Alaska. He writes that he finds many foot-prints of G. L. Drake, '12, who formerly held this position.

#### STATES RECEIVE GOODLY PORTION OF NATIONAL FOREST RECEIPTS

**T**HE total receipts of the National Forests of Arizona for the fiscal year that ended on June 30 last were, \$511,380.70, and the receipts of the New Mexico forests for the same period were, \$358,735.69. The Arizona forests ranked second of all the states in receipts, being outranked only by California. New Mexico stood sixth from the top.

Of these receipts the state of Arizona and its counties will receive \$171,928.80 for roads and schools, and \$45,261.18 in addition will be spent by the Forest Service in building roads within the forests. This latter fund is known as the ten per cent fund and is altogether distinct from the \$10,000,000 Forest Service road fund provided in last year's post office appropriation bill.

Of the receipts from the New Mexico forests, the state and counties of New Mexico receive \$104,752.54 for roads and schools, and an additional sum of \$33,864.42 will be spent under the ten per cent provision for roads.



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FOREST REGULATION—Filbert Roth.....	2.00
PRACTICAL TREE REPAIR—By Elbert Peets.....	2.00
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TREES, SHRUBS, VINES AND HERBACEOUS PERENNIALS—By John Kirkegaard.....	1.50
TREES AND SHRUBS—By Charles Sprague Sargent—Vols. I and II, 4 Parts to a Volume—Per Part.....	5.00
THE TRAINING OF A FORESTER—Gifford Pinchot.....	1.35
LUMBER AND ITS USES—R. S. Kellogg.....	1.15
THE CARE OF TREES IN LAWN, STREET AND PARK—B. E. Fernow.....	2.17
NORTH AMERICAN TREES—Y. L. Britton.....	1.50
KEY TO THE TREES—Collins and Preston.....	1.50
THE FARM WOODLOT—E. G. Cheyney and J. P. Wentling.....	1.75
IDENTIFICATION OF THE ECONOMIC WOODS OF THE UNITED STATES—Samuel J. Record.....	1.75
PLANE SURVEYING—John C. Tracy.....	3.00
FOREST MENSURATION—Henry Solon Graves.....	4.00
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AMERICAN WOODS—Romeyn B. Hough, 14 Volumes, per Volume.....	7.50
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PRINCIPAL SPECIES OF WOOD; THEIR CHARACTERISTIC PROPERTIES—Chas. H. Snow.....	3.50
HANDBOOK OF TIMBER PRESERVATION—Samuel M. Rowe.....	5.00
TREES OF NEW ENGLAND—L. L. Dame and Henry Brooks.....	1.50
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TREES—Wardell Marshall.....	1.50
OUR NATIONAL PARKS—John Muir.....	1.91
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MANUAL FOR NORTHERN WOODSMEN—Austin Cary.....	2.12
FARM FORESTRY—Alfred Akerman.....	.57
THE THEORY AND PRACTICE OF WORKING PLANS (in forest organization)—A. B. Recknagel.....	2.10
ELEMENTS OF FORESTRY—F. F. Moon and N. C. Brown.....	2.20
MECHANICAL PROPERTIES OF WOOD—Samuel J. Record.....	1.75
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\* This, of course, is not a complete list, but we shall be glad to add to it any books on forestry or related subjects upon request.—EDITOR.

## STATE NEWS

(Continued from Page 1496)

tion to several representatives of the Wisconsin department of agriculture, who acted as hosts.

After going over conditions in Wisconsin, a brief trip was made through the infected area in Minnesota, where conditions are even more serious than in this state. A publicity campaign among pine owners, showing practical control methods, is being started. The progress of white pine blister is slow and hope of limiting its spread is held.

## SEED BURNED FORESTS BY USE OF AIRPLANES

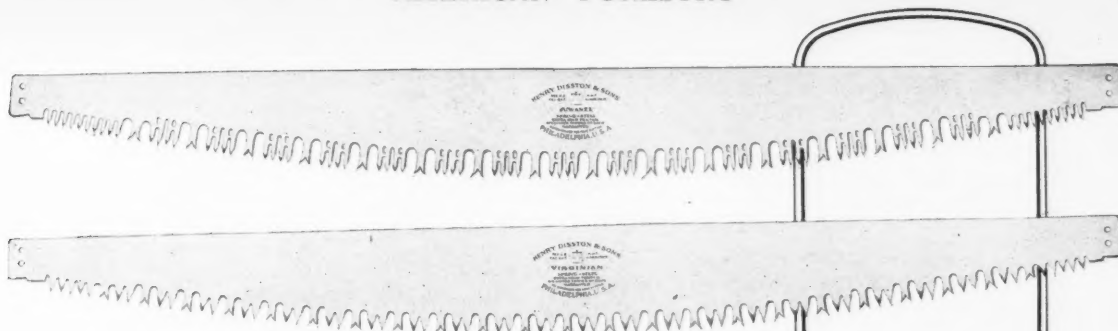
THE Forest Service has been urged by Representative Randall, of California, to start a re-forestation program for the fire-denuded areas in the Sierra-Madre Range by using airplanes to scatter millions of tree seeds over these mountains as soon as the rainy season begins. After his conference with Service officials, Mr. Randall wired civic organizations in Pacific Coast cities to organize Forestry Services to press action by the Government.

## BOOK REVIEWS

"Forest Products—Their Manufacture and Use," by Nelson Courtlandt Brown. John Wiley & Sons, New York. 471 pages, 120 figures, \$3.75 net. To those who are interested in the chief commercial features involved in the principal forest industries, lumber excluded, this book will be most welcome as filling a much needed gap in American forestry literature on the principles and practices followed in the production of materials which, from the viewpoint of invested capital and value of products, are of greater importance, collectively, than lumber. The subject is presented clearly and interestingly but necessarily with brevity as it would not be possible to treat in detail the many topics covered in one volume. This is exemplified by the following subjects, each treated in a separate chapter: General introduction—Original forests—History of lumber cut; Wood Pulp and Paper; Tanning Materials; Veneers; Slack Cooperage; Tight Cooperage; Naval Stores; Hardwood Distillation; Softwood Distillation; Charcoal; Boxes and Shooks; Cross Ties; Poles and Piling; Posts; Mine Timbers; Fuelwood; Shingles and Shakes; Maple Syrup and Sugar; Rubber; Dye Woods and Materials; Excelsior; Cork. The values and conditions used are, to a large extent, given for the period prior to the participation of this country in the war, Commissioner Brown deeming this advisable because of the wholly abnormal and somewhat temporary conditions brought about by the war itself. Brief bibliographies, which were used to some extent as sources of information, are appended at the end of each chapter, and can be consulted for further study in each subject. Much of the data given have been obtained by Commissioner Brown during his personal investigation and inspection of operations in the South, the Lake States, the Northwest and the far West, while some of the material was collected on his trips to various European countries.

"The Condensed Chemical Dictionary," a reference volume for all requiring quick access to a large amount of essential data regarding chemicals and other substances used in manufacturing and laboratory work. Compiled and edited by the Editorial Staff of the Chemical Engineering Catalog, F. M. Tumer, Jr., Technical Editor. The Chemical Catalog Company, Inc., New York. Price, \$5.00. This book differs from the ponderous reference books of the technical laboratory in many respects other than its small size and compactness. It is written for the business man, the lawyer—the man in the street with only a slight knowledge of chemistry, as well as for the professional chemist. Information of all kinds, some of it not





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**ARBORICULTURIST** is open to an engagement to take charge of, or as assistant in City Forestry work. Experience and training, ten years, covering the entire arboricultural field—from planting to expert tree surgery—including nursery practice, and supervision in the care and detailed management of city shade trees. For further information, address Box 700, care of American Forestry.

### An Opening For One Hundred Foresters

The position is that of Division Firewarden; the territory is approximately one-third of the State of New Jersey; the work is general administration of all forest fire matters together with attendance at large fires, investigation of the causes of fires, supervision of the personnel of the local firewarden service, about one hundred men, and responsibility for the publicity and propaganda fire prevention work in the territory. The compensation is \$1,200 to start, with every likelihood of increase shortly, the qualifications are that a man shall be a graduate of some reputable technical forestry school. The reason for requiring technical training is that advancement may be either in the forest fire work or in the technical forestry activities of the Department and in addition the incumbent is called on during the slack season for forest fire work, to do technical and propaganda forestry work in his territory. Apply Box 830, care American Forestry, Washington, D. C.

**POSITION** wanted by technically trained Forester. Have had fourteen years experience along forestry lines, over five years on the National Forests in timber sale, silvicultural and administrative work; three years experience in city forestry, tree surgery and landscape work. Forester for the North Shore Park District of Chicago. City forestry and landscape work preferred, but will be glad to consider other lines. Can furnish the best of reference. Address Box 600, care American Forestry Magazine, Washington, D. C. (1-3)

**YOUNG MAN** recently discharged from the U. S. Navy, wants employment with wholesale lumber manufacturer; college graduate; five year's experience in nursery business; can furnish best of references. Address Box 675, care American Forestry Magazine, Washington, D. C. (1-3)

Man to be discharged from the Army September 30th desires position in forestry work, with lumber or railroad company or assisting in investigations of utilization of wood products. Would accept position in other work. Is married man, graduate of Michigan Agricultural College, 1913. Has had experience in orchard work, clearing land, improvement cuttings, planting and care of nursery, pine and hardwood transplants, orchards and larger trees, grading and construction of gravel roads, and other improvement work. Has executive ability and gets good results from men. Please address Box 860, care of American Forestry Magazine, Washington, D. C. (9-11)

**FORESTER** wanted as Division Firewarden in New Jersey. Must have professional training and some experience. Salary \$100 to \$120. Eligible for promotion to Assistant Forester. Civil Service examination can be taken after provisional appointment or by mail. Box 810, care American Forestry Magazine, Washington, D. C.

**WANTED**—Position as Forester and Land Agent. Technically trained forester, 35 years old. Practical experience along all lines included under the duties of the above positions. Former Captain, Field Artillery. Address Box 840, care American Forestry, Washington, D. C.

**WANTED**—Position with Lumber Company or Private Concern by technically trained Forester with five years practical experience. Box 820, care American Forestry.

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strictly chemical, is packed in its more than 500 pages—fire risk in shipping, kind of containers employed, commercial uses, and the like—and yet it is so scientifically accurate that it will no doubt be added to every library on technical chemistry. The mystery of the alchemists still obtains in the field of chemical nomenclature and terminology to the average man. The Condensed Chemical Dictionary is especially designed to make chemical terms available and understandable to this audience, and is admirably fitted to do this by the editor, F. M. Tumer, Jr., and his several technical advisers.

"Timber—Its Strength, Seasoning and Grading," by Harold S. Betts. McGraw-Hill Book Company, Inc., New York. 234 pages, 27 tables, 107 illustrations. Price \$3.00. In readily accessible form, this book presents important technical data and in-

formation on wood. This is the first adequate book on wood as an engineering material. It treats the subject in a direct, practical way.

As indicated by the subtitle, the book covers testing, seasoning and grading. Both hard and soft woods are considered. The data given are derived almost entirely from tests and investigations on the mechanical properties of wood made by the Forest Service of the United States Department of Agriculture. The material may therefore be regarded as reliable.

The various chapters cover:

I. Timber Resources of the United States. II. The Strength of Wood. III. Effect of Moisture and of Preservative and Conditioning Treatments on the Strength of Wood. IV. Strength of Wooden Products. V. Seasoning of Wood. VI. Grading of Lumber by Manufacturers' Associations. VII. Lumber Produced and Used in the United States.

The information offered is invaluable to every man who uses, sells or manufactures wood and wood materials.

"The Hidden Aerial," by Lewis E. Theiss. W. A. Wilde Company, Boston, Massachusetts. 332 pages. Price, \$1.35 net. This story will appeal to any boy who likes life in the open, or who is interested in radio communication. Primarily it is the story of a band of boys who enlisted in the boys working reserve to serve their country during the war; secondarily it is the story of a wireless spy hunt. Some of the characters which Mr. Theiss has introduced in his other wireless stories appear in this volume, for, being too young to engage in other war work, they joined the boys working reserve for service on the farms. However, their wireless training serves them well when called upon to engage in a hunt for hidden wireless apparatus.

It is an interesting story, with clean, wholesome characters, ever alert, ever anxious to play their part in every adventure which comes.

The volume is illustrated with color frontispiece and black and white illustrations.

### VERDE STRIP ADDED TO NATIONAL FORESTS

**P**RESIDENT WILSON has signed the proclamation which adds the so-called "Verde Strip" to the Coconino and Prescott National Forests in Arizona, according to word received by the local district office of the Forest Service. The total area added is 179,290 acres, and extends along the Verde River from below Rutherford to above Cottonwood. The addition was made chiefly because the Reclamation Service desired to have this area brought under Federal regulation and control in order to protect the Verde watershed from overgrazing and erosion. The stockmen and settlers within the area were favorable to its addition to the National Forest territory adjoining.

### R. H. RUTLEDGE PERMANENTLY IN CHARGE OF DISTRICT ONE

**P**ERMANENT adjustment of the executive forces of district No. 1 of the Forest Service, as approved by the Secretary of Agriculture and the Forester at Washington, D. C., have been announced at the Missoula headquarters of the district.

First and most important of all is the appointment of Richard H. Rutledge as District Forester in charge of all national forests in Montana and northern Idaho. Mr. Rutledge has been acting District Forester since the departure of F. A. Silcox in the summer of 1917 and his appointment as Chief of the district is now made permanent, a fact which is especially pleasing to his subordinates and his many friends in Missoula and vicinity.

Mr. Rutledge is a veteran of the Forest Service, having first entered it as a ranger at Fayette, Idaho, in 1905, 14 years ago. In 1907 he was appointed supervisor of the Coeur d'Alene forest, and in the fall of 1908 came to Missoula as Assistant District Forester of operations in the district, and has remained here since. In 1910 he became Chief of the Department of Lands, remaining in that position for four years until transferred back to operations in 1914. As mentioned before, he succeeded Mr. Silcox when the latter left for Washington in 1917.

### COMMENT ON TROPICAL WOODS

**R**EFERRING to an article which appeared in the August issue of AMERICAN FORESTRY, entitled, "Uncle Sam, Lumberman, Canal Zone," Mr. C. H. Pearson, an expert on foreign and domestic cabinet woods, makes interesting comment. Mr. Pearson said in part: "Lignum vitae does not grow in the Canal Zone, nor are cacti found there as shown in one of the illustrations. The other scenes are probably from Porto Rico or Cuba where this Almendro de la India is planted as a shade tree. The Lignum vitae referred to by the author is a spurious variety called locally Guayacan, which happens to be the Spanish name for true Lignum vitae. Not a pound of this wood was ever used by any of the Navy Yards in this country, because it was found entirely unfit for the purpose intended. The Almendro to which the author refers in the text is a native forest tree of large proportions and is botanically distinct from this introduced species illustrated and locally called Almond. Special attention is called to the grotesque shapes assumed by these trees as a result of the tropical winds, but the traveler in Panama is well aware that there are no localities in the Republic where the wind is permanently in one direction which would give shade trees this form and outline. This is another reason to believe that the pictures were taken on the south coast of Porto Rico or some other island of the West Indies."



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### SCHOOL BOYS MOBILIZED IN REFORESTATION PLAN

**M**OBILIZATION of thousands of youngsters for service in systematic flood control work around Los Angeles has been completed. In addition to obtaining co-operation of the principals of the high schools, County Forester Flintham was authorized by the Board of Supervisors to obtain 200,000 young trees for planting back of piling defining the stream channels. These will be of hardwood varieties, which will establish themselves firmly without spreading into the stream channel.

In the seed-gathering campaign beginning immediately, there will be a systematic plan. Approximately fifty boys a day will be kept on the job indefinitely. The gathering of seeds is authorized by the school principals and will be done in school time under the direction of teachers of the schools from which the boys come. Some twenty varieties of brush seed will be gathered for planting in the areas swept by the recent forest fires. It has been found that considerable care will have to be exercised in

planting the seed, as the warm weather following the first big rain of the season made a crust over the hillsides. The seed will have to be raked in to be effective.

### SCOPE OF THE FOURTEENTH CENSUS EXTENDED

**T**HAT the Fourteenth Decennial Census, on which the actual enumeration work will begin January 2, 1920, is to be the most important ever taken is shown by the fact that the Act of Congress providing for this census expressly increased the scope of the inquiries so as to include forestry and forest products, two subjects never covered specifically by any preceding census act.

The compilation and gathering of forestry and forest products statistics will be in charge of a special force of experts. The accurate and comprehensive figures gathered concerning this vital natural resource will be much in demand, and the comparisons made with conditions existing before the war will be of great interest.



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### REFORESTATION OF PORTO RICO IS PLANNED

THE reforestation of Porto Rico along scientific lines is about to be undertaken. Robert Murray Ross, an expert in forest planting, recently arrived at the experimental station in Rio Piedras, fully equipped to undertake the big problem, but had barely entered upon his duties when he was offered a position in Santo Domingo paying him a very much larger salary and so resigned to accept the Santo Domingo position. E. Murray Bruner, Supervisor of the U. S. Forestry Service in this island and Chief of the Porto Rico Forestry Service, in writing of the practical plans to be inaugurated, says:

"This is a work of immeasurable magnitude in its importance and possibilities. The field is unlimited, while the need is immediate and urgent.

"There is no country in the Western Hemisphere in more acute need of extensive reforestation than Porto Rico. The inhabitants of no other part of America suffer so much from the deprivation of essentially needed fuel wood, native lumber and related forest products. Nowhere else is the per capita consumption of wood so small as in Porto Rico. Nowhere else has deforestation, due to destructive methods of exploitation become so nearly complete. Originally as completely covered with as rich a forest as could be found in this part of the world Porto Rico today presents the sad spectacle of a country literally stripped of its forest wealth and entirely dependent upon importation of all classes of lumber and construction timber while more than 50 per cent of the total land area lies completely idle except as it supports a practically worthless growth of coarse grasses and brush.

"The cost of substantial and comfortable homes built of wood has become so exorbitantly high as to be out of reach of even the moderately well to do, while the poor can aspire to no home superior to a miserable shack built of scraps of wood and other cast away materials. Rents are excessively high. Fuel wood is so scarce and costly that the poor must depend upon such fagots and twigs as the women and children are able to gather up in their tiresome and incessant searches, even the heavier and harder portions of the palm branches being eagerly sought. Poles, posts and fencing materials can hardly be had at all. Even the small sized cross ties required by the new narrow gauge railroads must be imported from Santo Domingo, the scrubby and generally despised mesquite under the dignified name of "bayahonda" furnishing the bulk of these ties which cost the consumer about one dollar per tie. Sawmills for the manufacture of native lumber are unknown. Lumbering as an industry has disappeared.

"And in the face of all this we are confronted with the absolute fact that the sup-

ply of southern yellow pine upon which we are so nearly completely dependent for all ordinary construction, will be exhausted, in so far as the general market is concerned, within 14 years, and that within five years the remaining original supply will be in the hands of so few mill operators that effective competition in prices will have disappeared.

"The time is at hand when the people of Porto Rico must arouse themselves to this deplorable economic and social condition, for it vitally affects every home, every individual in the Island. Earnest energetic and concerted attention must be directed at once to the solution of the forestry problem. And the only solution must come through the intensive practice of reforestation on a large scale, the planting of fuelwood, and lumber producing trees on thousands and hundreds of thousands of acres of idle lands from which the once potentially rich forests have been so destructively removed.

### CARRIER PIGEONS AID FORESTERS

DURING the recent severe forest fires in certain sections of the West, carrier pigeons were successfully employed to convey messages from the fire fighters "at the front" to headquarters. The test of the birds for this use was on a limited scale but has encouraged the Forest Service officials to believe that they can be employed profitably on a larger scale.

The experiment lends special interest to a plan which is being considered for cooperation between the Department of Agriculture and the Navy Department, under which carrier pigeons and equipment of the latter department may become available. To establish a successful carrier pigeon system it will be necessary to lay plans during the coming winter, to have the posts properly located, and get the birds acclimated and begin their training. Flights of 600 miles in a single day have been made, while a distance of 140 to 200 miles means a two or three hour flight for the average bird. Since the distances which would be covered in Forest Service work are considerably less than this there appears to be no difficulty in this regard. In most instances the flights from fire fighting areas to headquarters would be considerably less than 50 miles. The value of the birds would be particularly great in mountainous regions where travel is difficult.

### FOREST FLYER KILLED

LIEUT. J. WEBB, of Glendel, California, was killed, and Sergt. John C. McGinn, of Salt Lake City, was seriously injured when the airplane Lieutenant Webb was piloting fell in a tail spin and crashed to the earth at Medford. The aviators were on fire patrol duty.

